COAST GUARD ARCTIC IMPLEMENTATION CAPABILITIES

(114–49)

HEARING

BEFORE THE

SUBCOMMITTEE ON
COAST GUARD AND MARITIME TRANSPORTATION

OF THE

COMMITTEE ON
TRANSPORTATION AND
INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

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SECOND SESSION

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July 8, 2016

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Coast Guard and Maritime Transportation
FROM: Staff, Subcommittee on Coast Guard and Maritime Transportation
RE: Subcommittee Hearing on the "Coast Guard Arctic Implementation Capabilities"

PURPOSE

The Subcommittee on Coast Guard and Maritime Transportation will meet on Tuesday, July 12, 2016, at 10:00 a.m. in 2167 Rayburn House Office Building to receive testimony related to Coast Guard Arctic Implementation Capabilities. The Subcommittee will hear from the U.S. Coast Guard, the U.S. Government Accountability Office, the U.S. Navy, the Congressional Research Service, the Shipbuilders Council of America, and the Center for Strategic and International Studies.

BACKGROUND

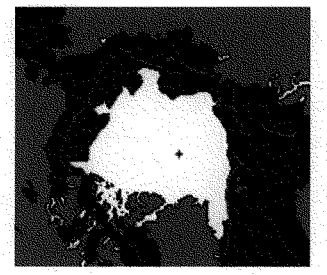
The Arctic region is the area north of the Arctic Circle, North Latitude 66.5622°. The Arctic Ocean dominates the Polar region, covering 6 million square miles (15.6 million square kilometers). Arctic temperatures range from an average winter value of -40° F (-40° C) to an average summer temperature just under 32° F (0° C). There are eight Arctic nations: Canada, Denmark (for Greenland), Finland, Iceland, Norway, Russia, Sweden, and the United States.

The United States Arctic, as defined in statute, includes 39,000 miles of shoreline in Alaska, including the Aleutian Islands. The Administration regards over half of United States Arctic waters, 242,000 square nautical miles, as navigationally significant. However, only two percent (4,300 square nautical miles) have been surveyed with modern technology.[1] Three Arctic

[1] In 2015, NOAA collected 500 square nautical miles of coastal area data along western Alaska and 12,000 linear nautical miles of trackline depth measurements along the Coast Guard's proposed transit route between the Bering Strait and Dutch Harbor (see Appendix for Bering Strait Port Access Route figure).

seas - the Bering, the Chukchi, and the Beaufort - border Alaska and historically these seas have been frozen for more than half the year.

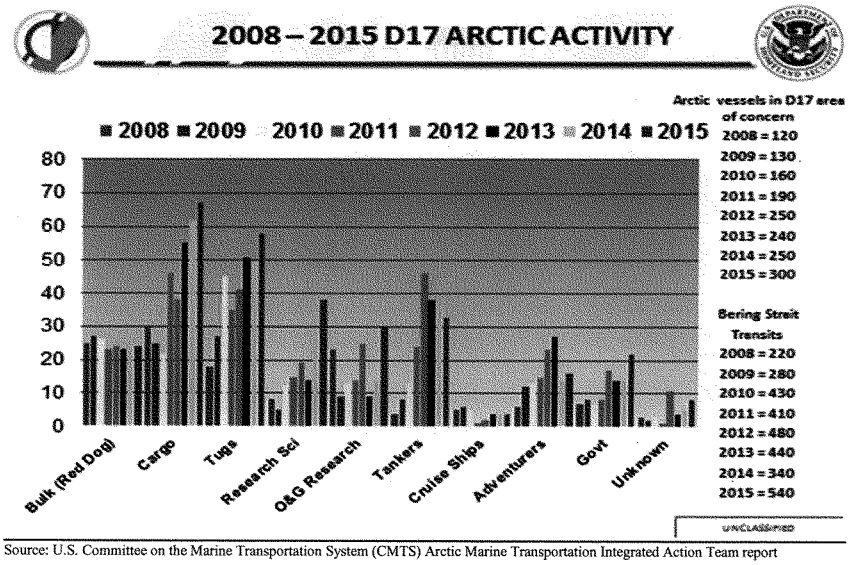
The U.S National Snow and Ice Data Center (NS&DC) reports the Arctic sea ice mean for 1981-2010 was 2.51 million square miles (6.5 million square kilometers), shown as the pink line in the NS&DC graphic to the right. The white shows September 2015 sea ice levels, totaling 1.78 million square miles (4.6 million square kilometers).



Source: National Snow and Ice Data Center

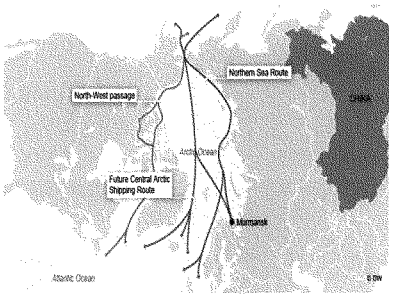
The Arctic maritime season typically runs from June through October, with unaided navigation occurring during a more limited time frame.

The reduced levels of summer sea ice have led to increased vessel traffic in the region. The following figure shows vessel traffic in the Arctic since 2008.



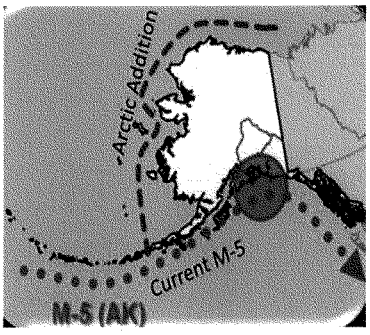
Source: U.S. Committee on the Marine Transportation System (CMTS) Arctic Marine Transportation Integrated Action Team report titled "A Ten-year Prioritization of Infrastructure Needs in the U.S. Arctic." D17 is Coast Guard District 17 Alaska.

Arctic transit routes include the Northwest Passage (green) and the Northern Sea Route (red) and the potential Transpolar Sea Route (blue) as shown in the graphic to the right. According to the U.S. Committee on the Marine Transportation System (CMTS), even with lower summer sea ice levels, navigation in the Arctic will continue to be challenging and hazardous, in part due to the variability of sea ice from year to year.[2]



Source: Deutsche Welle 12-15-2014 article

CMTS also reports that the America's Marine Highway (AMH) System is not currently reflective of the commercial shipping activity along the Arctic areas of the west and north coasts of Alaska.[3] The closest route is the M-5 Alaska Marine Highway Connector that currently consists of the Pacific Ocean coastal waters, including the Inside Passage. The Coast Guard is developing a proposed Arctic route through the Bering Strait to the M-5 AMH Connector through its Bering Strait Port Access Route Study.



Source: CMTS

In addition to increased vessel traffic in the region, exploration efforts could increase due to international interest in the oil (estimated at 13 percent of world's undiscovered oil), gas (30 percent undiscovered gas), and mineral deposits(roughly $1 trillion worth or gold, zinc, nickel and platinum) in the Arctic.

International cooperation in the Arctic includes the Arctic Council, which was established in 1996 with the signing of the Ottawa Declaration. The Council is made up of the eight Arctic nations. Organizations representing Arctic indigenous peoples have permanent participant status on the Council. The Council chairmanship rotates among the nations; currently the United States is chair (2015-2017). The Council is a consensus based, intergovernmental forum that works to promote environmental, social, and economic aspects of sustainable development in the Arctic.

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[2] "*A Ten-year Prioritization of Infrastructure Needs in the U.S. Arctic*", U.S. Committee on the Marine Transportation System (April 2016).
[3] *id.*

In 2009 and 2013, the Administration released strategic guidance and policies[4] for the Arctic region. The 2013 National Arctic Strategy outlines the United States national security interests in the Arctic region. It also lists prioritized lines of effort, building upon existing initiatives by federal, state, local, and tribal authorities, private sector, and international partners, focusing on efforts where opportunities exist and action is needed. Many federal departments and agencies developed their own Arctic strategies, based on the national strategy, including the Coast Guard.

The Coast Guard's 2013 Arctic Strategy states the Service's current suite of cutters, boats, aircraft, and shore infrastructure must meet its near-term Arctic mission demands. Coast Guard assets are all located below the Arctic Circle. To address this issue, the Service employs mobile command and control platforms, such as large cutters and ocean-going ice-strengthened buoy tenders, as well as seasonal air and communications capabilities through leased or deployable assets and facilities. These mobile and seasonal assets and facilities have proven to be important enablers for front-line priorities in the region, including search and rescue operations, securing the maritime border, collecting critical intelligence, responding to potential disasters, and protecting the marine environment.

There have been a number of U.S. reports[5] indicating priority areas for the United States to focus on in the Arctic, including acquiring new heavy icebreakers, conducting surveys to improve nautical charts, improving communications capabilities, improving weather forecasting and modeling, constructing a deep-draft U.S. Arctic port(s), and developing community and regional emergency response networks in preparation for vessel and aircraft accidents and environmental damage related to increased ship traffic and industry.

Since 2012, the Coast Guard has implemented Arctic Shield operations, with the objective to perform Coast Guard missions, enhance Arctic maritime domain awareness, broaden partnerships, and enhance and improve preparedness, prevention, and response capabilities. The Service deployed a number of assets as part of its Arctic Shield 2015 operations, including the ice breaker Coast Guard Cutter (CGC) *Healy*; the national security cutter *Waesche*; the high endurance cutter *Boutwell*; the medium endurance cutter *Alex Haley*; the seagoing buoy tenders *Sycamore* and *Maple*; and two Coast Guard MH-60 Jayhawk helicopters from Air Station Kodiak, Alaska which were forward deployed to Deadhorse, Alaska. Arctic Shield 2015 operations included an oil spill exercise near Kotzebue, Alaska. Arctic Shield 2016 operations include a planned joint Coast Guard – U.S. Northern Command sponsored mass search and rescue exercise scheduled for August 22, 2016 through August 26, 2016.

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[4] 2009 President National Security Directive; 2009 Presidential directive on the Arctic region; and 2013 National Strategy for the Arctic Region, with its 2014 and 2016 Implementation Plans.

[5] 2009 Arctic Council *Arctic Marine Shipping Assessment*; 2013 White House National Strategy for the Arctic Region (NSAR) and 2014 Implementation Plan; CMTS 2013 Arctic Report; 2014 GAO *Maritime Infrastructure: Key Issues Related to Commercial Activity in the U.S. Arctic over the Next Decade*; and 2015 Alaska Arctic Policy Commission report and implementation plan.

U.S. Government Accountability Office Report

In June 2016, the U.S. Government Accountability Office (GAO) released a report titled "*Implementation of Arctic Strategy is Underway, but Agency Could Better Assess How Its Actions Mitigate Known Arctic Capability Gaps*." In the report, the GAO reviewed the Coast Guard's responsibilities, capabilities, and plans for the Arctic. The report outlines the Coast Guard's progress implementing its Arctic Strategy, its ability to assess its Arctic capabilities and actions taken to mitigate and identify gaps, and its ability to carry out polar icebreaking operations.

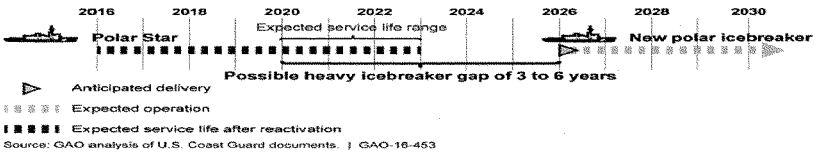
The GAO found positive results with the Coast Guard's implementation of its Arctic Strategy. The Service is using Arctic Shield operations as its primary method to better understand agency capabilities and associated gaps in order to take action to help mitigate any gaps. However, the GAO reported the Service is not systematically assessing its actions, across the agency, and without this assessment the Service cannot fully assess the effectiveness of its mitigation efforts. In its response to the GAO, the Service stated that starting in December 2016 it would conduct annual reviews that will include an assessment of the effectiveness of its mitigation efforts. The GAO urged the Service to also review Arctic capability gaps of other agencies and how they may impact Coast Guard missions.

The Service has two Class III-heavy icebreakers – CGC *Polar Sea* (inactive since 2010) and CGC *Polar Star* – that were built in 1978 and 1976, respectively. As mentioned earlier, the CGC *Healy*, a medium ice breaker built in 2000, is also active and operates in the Arctic.

The GAO notes that since 2010 the Coast Guard has been unable to fulfill some of its icebreaking responsibilities, mainly due to the *Polar Sea* being inactive. The Service's ice breaker fleet supports scientific research, within its Ice Operations mission, and promotes maritime security as part of its Defense Readiness mission. Between 2010 and 2015, the Service was unable to complete five out of 26 requests for polar icebreaking, including four of 11 requests in 2011 and 2012 when both the *Polar Sea* and *Polar Star* were unavailable.

Further, the GAO reported that future plans to acquire a new icebreaker by the Coast Guard are limited by legal and operational requirements and current projections show a three to six year gap in heavy icebreaking capability before a new icebreaker is operational, as shown in the following GAO graphic.

Coast Guard's Heavy Icebreaker Availability and Expected Capability Gaps, Present until 2030



Source: GAO analysis of U.S. Coast Guard documents. | GAO-16-453

Finally, the GAO noted the Service has not determined the cost effectiveness of reactivating the *Polar Sea*, estimates for reactivation range from $99.2 to $427 million. The 2015 Coast Guard Polar Icebreaker Bridging Strategy states that if the Service decides not to reactive the *Polar Sea*, it will need to determine the feasibility of extending the service life of the *Polar Star*. *Polar Star*'s 2012 reactivation cost $62.6 million for seven to ten years of additional service. The Service also notes in the Bridging Strategy that leasing is not an option for the Service.

The President requested $150 million in the fiscal year 2017 budget request to fast-track construction of a new polar-class icebreaker. The Senate Committee on Appropriations responded and included $1 billion for the first ship of the Polar Icebreaker Recapitalization Project in S. 3000, Department of Defense Appropriations Act, 2017.

WITNESSES

ADM Charles Michel
Vice Commandant
United States Coast Guard

Ms. Allison Stiller
Principal Civilian Deputy
Assistant Secretary of the Navy Research, Development and Acquisition
United States Navy
Department of Defense

Ms. Jennifer Grover
Director
Homeland Security and Justice Issues
United States Government Accountability Office

Mr. Ronald O'Rourke
Specialist in Naval Affairs
Congressional Research Service

Ms. Heather A. Conley
Senior Vice President for Europe, Eurasia, and the Arctic
Center For Strategic and International Studies

Mr. Matthew O. Paxton
President
Shipbuilders Council of America

COAST GUARD ARCTIC IMPLEMENTATION CAPABILITIES

TUESDAY, JULY 12, 2016

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COAST GUARD AND MARITIME TRANSPORTATION,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:05 a.m. in room 2167, Rayburn House Office Building, Hon. Duncan Hunter (Chairman of the subcommittee) presiding.

Mr. HUNTER. The subcommittee will come to order. Good morning. Thanks for being here, everybody.

The subcommittee is meeting today to discuss the Coast Guard's Arctic capabilities. The Coast Guard talks about its assets through descriptions such as "an asset's capacity or capability." The term "capacity," as I understand, is a quantitative term which refers to how much, to what scale or volume a mission can be performed by the asset, and the term "capability" refers to the kinds of missions an asset can perform.

At our June hearing on Coast Guard mission needs and resource allocation, the GAO reported that Coast Guard assets new and old are not performing to capacity, creating mission gaps. In addition, GAO noted that the Coast Guard allocates resource hours at levels that are higher than actual asset usage hours—in fact, we probably spent about 10 or 15 minutes understanding this in the last hearing—also creating mission gaps, but potentially, a more artificial mission gap, depending on whether you believe the allocated resource hours are based on reality.

The reason I make that statement is for us in Congress to understand the needs of the Service we need to understand the current abilities of Coast Guard assets. Not the projected ability of an asset to meet mission needs, but its actual ability to perform a mission and the kind of missions it can support.

The Coast Guard has testified that its heavy icebreaker, the *Polar Star*, has the capacity—excuse me, has the capability of accessing any ice-covered region 24/7, 365 days of the year. It may have the capability, but by all accounts it does not have the capacity due to its age and maintenance needs. In fact, I think we figured out that the *Polar Star* can actually be on the ocean about 180 days out of the year, so about half the year.

The High Latitude Region Mission Analysis revealed the following Coast Guard missions—defense readiness, ice operations, marine environmental protection, and ports, waterways and coastal

security—in the Arctic were significantly impacted by the gap in mission performance. It is these gaps and the knowledge that when the *Polar Star* reaches the end of its extended service life we may have a period where the Coast Guard does not have a heavy icebreaker at all.

Progress is being made on the acquisition front, with $1 billion in the Senate defense bill for the first ship in the Polar Icebreaker Recapitalization Project. It has a way to go, but it is positive progress. I have supported this acquisition and annual funding for it in House appropriations bills, as have many of my colleagues.

I want to reiterate again that the Coast Guard and this committee are in lockstep on the need for a heavy icebreaker. But as we work towards the acquisition of our Nation's first heavy icebreaker since 1978, all of us have the inherent duty to have a discussion on what we will do now and continue to do until we deploy the appropriate number of icebreakers over the next several decades. And we are talking a decade out, at least, for the first icebreaker that we build.

My concerns continue to lie with current mission gaps in the Arctic, particularly defense readiness, due to the inability of assets to support year-round missions in the region. And I believe this is the responsibility that the Coast Guard and Navy should share.

So again, what is the plan, in the short term, to fill this gap? We heard at the June hearing that the material assessment for the *Polar Sea* will be sent to this committee conveniently after Congress gets out this month, on July 24. Just shy of 3 years after the deadline mandated in statute for making a determination of whether it is cost-effective to reactivate the *Polar Sea*, and 6 years since the vessel last operated, the Coast Guard will provide the committee a report on the condition of the vessel.

But don't worry that the Coast Guard is moving too swiftly or without deliberate care. We have been assured the material assessment will not even contain a recommendation for action, simply an assessment on the ship. This is the start of the process to see if she can be reactivated. Further information will not come until the alternative analysis is sent to Congress at the end of the calendar year, so we are looking at about 7 years since the *Polar Sea* last operated, and more than—almost 4 years since Congress passed a law that said that the Coast Guard is going to give us an analysis on whether the *Polar Sea* can be reactivated or not, and how much it would cost.

Time is ticking away and the vessels in the Coast Guard icebreaker fleet are either inoperable, aging and in need of extended time in dry dock, or incapable of working on ice-covered areas. Not a good situation to be in, but here we are.

I look forward to hearing from the witnesses today and discussing this important topic with them.

And lastly, I would just like to say, too, we talked to Secretary Stackley in the Navy and Admiral Michel, and we talked about creating a Naval-Coast Guard kind of collaboration office, a joint program office. Are we willing to do that today?

Ms. STILLER. Yes, sir. I am going to speak on behalf of Mr. Stackley, but yes, we are committed to working together to put to-

gether a memorandum of understanding on how we would work together collaboratively on the icebreaker.

Mr. HUNTER. Fantastic. And with that I yield to Ranking Member Garamendi.

Mr. GARAMENDI. Thank you, Mr. Chairman. And this is another very, very important hearing on the issues of the Coast Guard and the Arctic.

There is an old adage which states that failing to plan is planning to fail. Fortunately, when it comes to the Arctic region, by just about any measure the volume of planning initiatives undertaken by the Federal Government over the last several years has been both comprehensive in scope and substantial in number.

The National Arctic Strategy, the Coast Guard High Latitude Regional Mission Analysis, the Army Corps Arctic Deepwater Port Study are just a few of the studies that have been undertaken. They clearly demonstrate that there is no failure to plan for what will be a whole-of-government enterprise for many years to come. But at this point what is needed, now more than ever, is decisive and thoughtful decisionmaking, not only within the administration but also here in Congress. And that is why this hearing is so very important today.

Whether or not you believe that the Earth's climate is warming due to increased emissions of manmade greenhouse gases, that is not terribly relevant. The physical reality quickly unfolding across the High North and Antarctic continents is extremely relevant. The shrinking Arctic ice coverage, the caving of Antarctic ice sheets, Greenland's glaciers retreating at a pace never before recorded are each separately stunning developments. Taken together, however, they expose two unforgiving remote regions of the world in the midst of a rapid, wenching, systematic, environmental change. And if we have learned anything, we should expect the actual pace of environmental change in each polar region to far exceed the rates projected by our climate models.

So too we must expect human use of the Arctic to accelerate much faster than projected. And consequently, the Coast Guard, the Navy, and other Federal agencies will have to grapple with new demands and challenges far sooner than anticipated. That is why we must now switch gears from planning to action. Time is critical, and something we can ill afford to waste. We must begin to make some very hard but important decisions. We must ensure that the United States can decisively project and resolutely protect its sovereign interest in the Arctic and fulfill its international obligations in the Antarctic.

For example, if we need a new heavy icebreaker, let's get on with cutting the steel and laying the keels for these new hulls now. If we need new Arctic deepwater ports, let us identify the sites and set the Corps of Engineers to work. If we need to ensure emergency communications and safe navigation in the Arctic, let us appropriate the funding and direct the Coast Guard to get this underway.

All of these things and much more we need to do. But if we hope to shape our future in the Arctic and Antarctic, we must take decisive action before events in those rapidly evolving frontiers overwhelm our capability to respond effectively. Now is the time for us

to act, to make decisions, and to set in place the laws and money to get the job done.

Mr. Chairman, I look forward to this hearing.

Mr. HUNTER. I thank the gentleman. Let me introduce our witnesses today. They are Admiral Charles Michel, Vice Commandant of the U.S. Coast Guard; Ms. Allison Stiller, Principal Civilian Deputy to the Assistant Secretary of the Navy for Research, Development and Acquisition for the U.S. Navy; Ms. Jennifer Grover, Director of Homeland Security and Justice for the Government Accountability Office; Mr. Ronald O'Rourke, specialist in naval affairs with the Congressional Research Service; Ms. Heather A. Conley, senior vice president for Europe, Eurasia, and the Arctic for the Center for Strategic and International Studies; and Mr. Matthew Paxton, president of the Shipbuilders Council of America.

Admiral, we will start with you. You are recognized.

TESTIMONY OF ADMIRAL CHARLES D. MICHEL, VICE COMMANDANT, U.S. COAST GUARD; ALLISON STILLER, PRINCIPAL CIVILIAN DEPUTY TO THE ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT AND ACQUISITION, U.S. NAVY, DEPARTMENT OF DEFENSE; JENNIFER GROVER, DIRECTOR, HOMELAND SECURITY AND JUSTICE, U.S. GOVERNMENT ACCOUNTABILITY OFFICE; RONALD O'ROURKE, SPECIALIST IN NAVAL AFFAIRS, CONGRESSIONAL RESEARCH SERVICE; HEATHER A. CONLEY, SENIOR VICE PRESIDENT FOR EUROPE, EURASIA, AND THE ARCTIC, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES; AND MATTHEW O. PAXTON, PRESIDENT, SHIPBUILDERS COUNCIL OF AMERICA

Admiral MICHEL. Well, thank you, Chairman Hunter, Ranking Member Garamendi. Thanks for the opportunity to appear before you today to discuss Coast Guard capabilities in the Arctic. I ask that my written statement be accepted as part of the official record.

Guided by the National Strategy for the Arctic Region and our own Arctic strategy, the Coast Guard is responding to increasing mission demands in this important region. The Arctic presents unique opportunities and challenges to United States interests. U.S. security in the Arctic encompasses a broad spectrum of activities, ranging from those supporting safe commercial and scientific operations to national defense. To respond to this challenge, the United States must have the ability to safely and reliably operate here year-round.

Indeed, U.S. sovereignty and security interests in the Arctic hinge upon assured access, and heavy icebreakers are the only assets capable of dependably fulfilling this critical requirement for surface access. Yet the Coast Guard's heavy icebreaker inventory, which is our entire national capability, consists of a single operational vessel, which is 40 years old, the *Polar Star*. This is why we are answering the President's call to accelerate recapitalization of a new heavy icebreaker, and are planning for the construction of additional icebreakers.

Mr. Chairman, the Coast Guard shares your sense of urgency for this new capability and is grateful to your support of our effort to accelerate the heavy icebreaker acquisition. As you know, this is

the Coast Guard's immediate icebreaking priority, based on the age and material condition of our current fleet and our limited resources. I also take very seriously your concerns regarding the state of our current capability and the length of time it will take to deliver a new heavy icebreaker.

The Coast Guard is committed to continue working with Congress, the Navy, and industry to address these concerns, and I would like to tell you what we are doing on this front.

First, we remain committed to maintaining heavy icebreaking capability while we proceed with recapitalization. To do this, we must make a decision on whether to reactivate *Polar Sea* or extend *Polar Star*'s service life. To support this decision we just completed a 7-month material inspection on *Polar Sea*, including pulling her out of the water, and look forward to sharing our results with you later this month, formally. In accordance with the Coast Guard Authorization Act of 2015 we have also commenced the necessary alternatives analysis to inform this important decision that will be made by the end of this calendar year.

Based on what we know now, I can tell you that refurbishing *Polar Sea* would be a significant undertaking, and would likely far exceed the cost and scope of work that was needed to reactivate *Polar Star*.

Second, as you know, we are committed to exploring all possible alternatives to best accelerate our acquisition of new heavy icebreakers. To assure continued momentum and selection of the best acquisition strategy, we are leveraging our strong and longstanding partnership with the Navy, as you noted earlier, sir. To this end, we are working with the Navy to develop a program plan to efficiently and effectively move the icebreaker program forward, considering mechanisms such as block buys, multiyear procurements, and other opportunities to acquire icebreakers as quickly and responsibly as possible.

Similar to our experience working with the Navy to build *Healy*, a cooperative partnership that leverages the Navy's expertise in designing and acquiring ships will provide mutual benefits to both services, and will energize the U.S. shipbuilding industrial base.

Third, we are assessing additional Arctic needs and planning for construction of additional icebreakers. While multimission medium icebreakers such as *Healy* are less capable than heavy icebreakers, they can provide important capacity during certain seasons and certain ice conditions. We have recently chartered an integrated product team, or IPT, to define an operating concept and requirements for medium icebreakers. That IPT will survey available technologies and assets to inform the operational requirements for those vessels.

Fourth, while we proceed with recapitalization of a new heavy icebreaker, we are fully committed to exploring ways to address evolving U.S. security interests in the Arctic in the near term. We have aggressively reached out to industry across the globe, seeking out the latest in icebreaking technology. While single-mission icebreakers built to commercial standards are available on the global market, we have not yet identified any available multimission medium or heavy icebreakers suitable for military service. However, we are continuing to look. Given the urgency, we are open to con-

sidering any suitable options that could fulfill our unique authorities and multimission requirements.

Fifth, we are working with allies through engagements like the Arctic Coast Guard Forum to utilize our limited icebreaker capability to achieve better operational effect. This will include combined and joint operations with our allies.

In closing, thank you for support of our effort to accelerate the acquisition of a new heavy icebreaker to replace the aging *Polar Star*, as U.S. security interests in the Arctic ultimately hinge upon having assured year-round access. We look forward to working with Congress, the Navy, and industry to identify ways to responsibly accelerate the acquisition of a new heavy icebreaker, continue planning the construction of additional icebreakers, and explore capabilities that might be brought to bear to address our near-term concerns.

Thank you for your support of the Coast Guard and your efforts to ensure our men and women in uniform have the capabilities they need to safely and reliably execute our vital missions.

Thank you for the opportunity to testify, and I look forward to your questions.

Mr. HUNTER. Thank you, Admiral.

Ms. Stiller?

Ms. STILLER. Chairman Hunter, Ranking Member Garamendi, and distinguished members of the subcommittee, thank you for the opportunity to discuss the Navy's ongoing and continued involvement with the Coast Guard on ship design and ship construction programs. I request that my written statement be entered into the record.

The Navy fully supports the President's National Strategy for the Arctic Region and its corresponding implementation plan. The Navy also looks forward to working with Congress and the Coast Guard to answer the President's call to accelerate the recapitalization of heavy icebreaking ships to meet our national interests in the changing Arctic region.

The "U.S. Navy Arctic Roadmap 2014 through 2030" aligns with the national and Department of Defense Arctic strategies, and includes a plan that directs the development of Arctic capabilities and capacity in step with the changing environmental conditions. The Navy's four strategic objectives in the Arctic include ensuring U.S. Arctic sovereignty, providing ready naval forces; preserving freedom of the seas; and promoting partnerships.

The Navy will continue our strong cooperative partnership with the Coast Guard in addition to the interagency and international Arctic region stakeholders to address emerging opportunities and challenges presented by the seasonal opening of Arctic ocean waters. The risk of conflict in the region is low, and the Arctic Council and other diplomatic venues provide effective means to resolve disputes between nations. However, the Navy will continue to exploit all opportunities that will provide our sailors with superior maritime knowledge of the Arctic.

We will work closely with the Coast Guard to acquire the first heavy icebreaker in 2020, as defined by their recently approved Operational Requirements Document. Coupled with the congressional support, both the Navy and Coast Guard are working to de-

velop a program plan to efficiently and effectively move the icebreaker program forward.

As you know, the Navy has a long history of designing and acquiring ships, and we have offered our full range of experience and expertise to the Coast Guard and the icebreaker program. We are aware of the Coast Guard acquisition team's progress in executing an analysis of alternatives which, along with industry involvement, will inform the icebreaker acquisition strategy.

Together we are working to understand the best way to maximize our cooperative partnership and leverage the expertise of both of our agencies. The Navy is committed to the success of this icebreaker program, and we offer the support of our acquisition community during the design, development, construction, test, and delivery processes.

We stand ready to provide shipbuilding expertise in acquisition career fields, including program management, engineering, cost estimating, test, and manufacturing. We will provide access to facilities such as the model basin tow tank at Naval Surface Warfare Center to help retire technical risks during the design phase of the program. We will provide cost estimating support, as design tradeoffs are made.

We will also provide lessons learned on reuse of systems and components in the design phase to mitigate construction and support costs. In addition, we will work with the Coast Guard and industry to identify high-risk production processes, and propose ways to mitigate these risks to alleviate rework during the construction.

The Navy and the Coast Guard both stand to see the mutual benefit in this cooperative arrangement by using best practices to strengthen the shipbuilding industry base, and reduce costs in our Naval and Coast Guard new construction programs. The Navy stands alongside the Coast Guard in this endeavor to see the icebreaker program become a success.

Again, thank you for the opportunity to appear before you today, and I look forward to your questions.

Mr. HUNTER. Thank you, Ms. Stiller.

Ms. Grover, good to see you again.

Ms. GROVER. Thank you. Good morning, Chairman Hunter, Ranking Member Garamendi. The Coast Guard is responsible for carrying out its missions, including search and rescue and defense readiness in the Arctic waters, as in other areas. As diminishing sea ice may make the Arctic waters more attractive for commerce and tourism, the issue of Coast Guard Arctic capabilities becomes a more pressing issue.

My statement today will focus on two points: first, the Coast Guard's actions to address known Arctic capability gaps; and second, the Coast Guard's polar icebreaking capabilities.

The Coast Guard is well aware that it faces significant capability gaps in the Arctic, as do other organizations with operations in that area. For several years the Coast Guard has reported challenges, including a lack of reliable communications, limited nautical charting, and insufficient infrastructure for operating their aircraft and vessels. For example, there is limited aircraft infrastructure on the North Slope, and no deepwater ports on the North

Slope or near the Bering Strait for refueling and reprovisioning Coast Guard cutters.

The Coast Guard is working in close collaboration with other Federal agencies to address these and other capability gaps. For example, the Coast Guard used its 2015 Arctic Shield activities to test navigation systems and DOD communications equipment. In a report on the Coast Guard's Arctic capabilities that was conducted at the request of this subcommittee and being released today, GAO recommended that the Coast Guard begin systematically assessing the extent to which its actions have helped to mitigate Arctic capability gaps. The Coast Guard agreed and reported plans to begin doing so.

Regarding icebreaking, the Coast Guard has initiated the process to acquire a new heavy icebreaker. Although the Coast Guard is considering all options, several factors make the purchase of a new icebreaker a more likely outcome than leasing one.

For some of its missions, the Coast Guard is required to use a public vessel, which Federal law defines as one that the U.S. owns or demise charters, which is a special type of lease where the Coast Guard would have to crew, operate, and maintain the leased vessel. Also, Coast Guard vessels, whether purchased or leased, must be built in a U.S. shipyard. The Coast Guard has determined that no heavy icebreaker currently exists for purchase or lease that would meet its requirements, which means that one must be constructed, either via a Coast Guard purchase or for the purposes of a demise lease.

In considering these two options it is important to note that OMB requires agencies to acquire assets in the least costly manner. Prior analyses by the Coast Guard suggest that a lease option would likely cost the Federal Government more than a purchase over the icebreaker's expected 30-year service life, due to the ship owner's profit rate. Previous GAO work has echoed those findings that outright purchase can be a less costly alternative, compared to long-term vessel lease due to profit rate and the expected differences in Government versus private-sector borrowing costs.

As you have noted, while the acquisition process is underway, the Coast Guard risks operating for some time with no heavy icebreaker capacity. They are exploring their options, but have not made any bridging decisions yet.

In conclusion, the Coast Guard has taken important steps toward enhancing its Arctic operations. It is taking action to address known Arctic capability gaps, and has initiated the acquisition of a new heavy icebreaker. Moving forward, the Coast Guard could further enhance its capabilities by better understanding the impact of its actions on those Arctic capability gaps, and by determining how to bridge the gap between the *Polar Star* and a new icebreaker.

Chairman Hunter, Ranking Member Garamendi, this concludes my statement and I look forward to your questions.

Mr. HUNTER. Thank you, Ms. Grover.

Mr. O'Rourke?

Mr. O'ROURKE. Chairman Hunter, Ranking Member Garamendi, distinguished members of the subcommittee, thank you for the op-

portunity to appear before you today to discuss Coast Guard Arctic implementation capabilities.

Mr. Chairman, with your permission I would like to submit my written statement for the record and summarize it here briefly.

Mr. HUNTER. Without objection. And all the witnesses' written statements will be entered into the record in full.

Mr. O'ROURKE. As requested, my testimony focuses on acquisition of polar icebreakers, and particularly on savings that could be realized in acquiring two polar icebreakers. I have seven points I would like to make.

The first is that, given the potential requirement for up to three heavy and three medium polar icebreakers, a single new polar icebreaker would narrow but not necessarily close a potential gap in polar icebreaking capability. Any remaining gap could be further narrowed by a second new polar icebreaker.

My next point is that there are various possible approaches for acquiring two polar icebreakers. One approach, which is a potential baseline or default approach, would be to build the ships several years apart from one another, contract for them separately, and purchase materials and components for them separately.

A potential alternative approach would be to build the ships only a few years apart from one another, contract for them together under a block buy contract, and carry out a combined purchase of materials and components for the two ships.

My third point is that, compared to the potential baseline or default approach, the alternative approach would compress the funding stream for the two icebreakers into a smaller number of years, increasing average annual funding requirements, and reduce policymaker flexibility regarding whether and when to build the second ship, what design to build it to, and what shipyard to build it in. It would also likely get the second ship into service sooner, more quickly narrowing the potential gap in icebreaking capability, and it could reduce the combined acquisition cost of the two ships by at least 5 percent, and perhaps closer to 10 percent. This could equate to a savings of at least $100 million or so, and perhaps closer to $200 million.

My fourth point is that this savings of $100 million or perhaps closer to $200 million would be generated in three areas. First, the closer spacing between the ships could result in less loss of shipyard learning in shifting from the first ship to the second. Next, the use of a block buy contract would permit the shipyard to optimize its workforce and capital plant for a two-ship production run. And lastly, a combined material purchase would improve production economies of scale at material and component suppliers.

My fifth point is that the $1 billion that the Senate Appropriations Committee has recommended for a new polar icebreaker in the DOD Appropriations Act would more or less fully fund the acquisition of that ship. Alternatively, with congressional approval, an appropriation of $1 billion could be used to partially fund a two-ship acquisition. Under this scenario, the $1 billion would be used to develop the design, fund a combined purchase of materials and components for the two ships, and initiate construction on the first ship. The remainder of the funding for the two-ship acquisition would be provided in future fiscal years.

My sixth point is that if a shipyard that is awarded a contract to build one or more new polar icebreakers happens to be building other Coast Guard or Navy ships, then the addition of the icebreaker work could marginally reduce the cost of those other Coast Guard or Navy ships by absorbing some of the shipyard's fixed overhead costs.

My seventh and final point is that there are two options for temporarily narrowing a gap in polar icebreaking capability in the nearer term, prior to the entry into service of one or more new polar icebreakers. One would be to further extend the service life of *Polar Star* or *Polar Sea*; the other would be to charter one or more foreign polar-capable icebreakers, if such ships were available for charter. The United States has used both approaches in the past to mitigate polar icebreaking capability gaps. Whether either of these approaches would be feasible and cost effective in coming years would need to be examined.

Mr. Chairman, this concludes my remarks. Thank you again for the opportunity to testify, and I look forward to the subcommittee's questions.

Mr. HUNTER. Thank you, Mr. O'Rourke.

Ms. Conley?

Ms. CONLEY. Chairman Hunter, Ranking Member Garamendi, it is a privilege to testify before you today. I would like to provide the subcommittee with some broader thoughts on Arctic national security challenges and their relationship to U.S. readiness and capabilities.

While the United States has always prioritized its national security interests in the Arctic in a variety of strategic documents, there is a lack of consensus about what exactly constitutes national security in the Arctic. Some define Arctic national security in terms of America's missile defense architecture in Fort Greely Air Base in Alaska or Thule Air Force Base in Greenland, the increased presence of Russian special forces and the placement of surface to air missiles on remote Russian Arctic islands, as well as the increased activity of Russian submarines in the North Atlantic.

Yet for others, security in the Arctic means search and rescue operations, oil spill response, infrastructure development, greater maritime domain awareness, U.S. energy security. Still others view water, food, and human security of indigenous populations, as well as coastal village relocation, as security matters.

There is so much definitional confusion about Arctic security because it encompasses all forms, all of these forms of security, from missile defense to search and rescue to food security.

The Obama administration has primarily focused on the human and environmental dimension of the Arctic security challenge, which is certainly considerable. Senior officials have tended to discount or deny significant changes to Russia's military posture in the Arctic, but other Arctic nations such as Denmark, Finland, and Norway have recognized the growing hard security threats in the Arctic, and have begun to make necessary adjustments to their defense budgets and force posture.

It is clear to me that the projection of power in the Arctic today and in the future will be increasingly defined by both traditional hard power, as we are seeing in Russia's buildup of military pres-

ence in the Russian Arctic, as well as softer power of superior logistics and infrastructure capabilities, science, technology, the combined intuition of traditional and 21st-century knowledge, accurate predictive meteorological and ice modeling, and enhanced satellite communications.

The projection of power in the Arctic will be multifaceted, and will require a new U.S. approach to the region. So, will a single heavy icebreaker meet America's comprehensive security needs in the Arctic? It will not. But it will certainly enhance the U.S. operational capacity, state of readiness, and ability to respond and be resilient to the rapid changes in the Arctic.

But it is also important to note that this heavy icebreaker is not solely intended for the Arctic. It will be utilized in Antarctica, as the U.S. currently lacks additional and redundant heavy icebreaker capabilities, should the recently refurbished 1970s-constructed *Polar Star* become inoperable when resupplying our research station in Antarctica.

Due to limited assets above the Arctic Circle, the Coast Guard has at times been forced to rely on third-party responders, asked other countries to loan us their spare icebreaking capacity, and it is only by chance that the *Healy*, in December of 2012, was in the right place at the right time—and it wasn't originally supposed to be—to provide icebreaking capabilities to provide emergency fuel to Nome, Alaska.

As the world's leading maritime power, the United States has been living on good luck and borrowed time for far too long, and I fear the future incident when our luck runs out. But let us be clear. One heavy icebreaker is not a silver bullet. It is not a substitute for enhanced satellite communications, aviation assets, deepwater ports, navigational aids, and internationally approved hydrographic mapping. It does not solve the funding challenges of the long-range radar sites in Alaska, which track aircraft through Alaskan airspace and along its borders. It doesn't serve our emergency airfields, our halfway points for refueling. It doesn't support our Missile Defense Agency operations. It does not enhance our military's cold-weather fighting capabilities. It does not build a new U.S. Coast Guard operating base or station above the Arctic Circle, which would improve search and rescue. It is only one piece of the larger Arctic security puzzle.

It is these extremely limited capabilities that I have just highlighted which call into question the ability of the U.S. Coast Guard and the U.S. Government to be able to perform basic national security tasks in the Arctic, let alone prevent future oil spills, assist in mass casualty events, respond to shipping accidents, acts of terrorism, ensure strong maritime law enforcement actions in the Arctic. And my fear is that our near exclusive focus on acquiring one heavy icebreaker will be deemed sufficient for our needed focus and budget on a variety of U.S. Arctic readiness initiatives. We must focus on the comprehensive task now.

The Obama administration has taken a leadership role in identifying readiness and preparedness as a major task for the American Arctic, but it has been very slow to develop the necessary infrastructure to implement these response capabilities.

The U.S. Coast Guard recognizes the growing concern of potential future maritime accidents in the narrow Bering Straits and the heightened risk factor posed by increased traffic through the Bering Straits, specifically LNG carriers from the Russian Yamal LNG project.

Arctic security will be challenged this August by the *Crystal Serenity*, a 1,700-passenger and cruise ship which will traverse the ice-clogged Northwest Passage which has very limited infrastructure.

Simply put, U.S. national security needs and challenges in the American Arctic far surpass existing Coast Guard implementation capabilities and the value added of acquiring one heavy icebreaker. But acquiring a heavy icebreaker is a critical step forward because the U.S. must be able to conduct freedom of navigation operations in the polar regions.

The U.S. also needs similar icebreaking operational capability redundancies in its medium strength icebreakers to ensure effective law enforcement and search and rescue capabilities.

We are in this position today because we have talked about this problem for many years, but did not take effective action. It is my hope that the acquisition of heavy icebreakers fuels greater investment in U.S. Arctic infrastructure and, hopefully, our defense capabilities as part of a multiyear and prioritized budget to improve U.S. national security in the Arctic.

Thank you.

Mr. HUNTER. Thank you for that comprehensive testimony, Ms. Conley.

Mr. Paxton, you are recognized.

Mr. PAXTON. Thank you, Chairman Hunter, Ranking Member Garamendi, and members of the subcommittee, for the opportunity to testify this morning.

The Shipbuilders Council of America is the largest national trade association representing the U.S. shipyard industry. The SCA represents 83 members——

Mr. HUNTER. Would you pull that mic right by—yes, thank you.

Mr. PAXTON. Oh, yes, sir. Sorry about that. The SCA represents 83 member shipyard facilities and 94 industry partner-member companies that are part of the vital supply chain that make up the shipyard industrial base.

My testimony this morning will focus primarily on the capability and capacity of the domestic shipyard industry to build and maintain the next generation of polar icebreakers. In addition, my testimony will speak specifically to the ability of the U.S. shipyard industry to deliver polar icebreakers as specified in the Coast Guard's polar icebreaker acquisition directorate.

However, within the shipyard membership of this trade association there are differing views on how the Coast Guard might best acquire an updated polar icebreaker capability, so I will refrain from promoting any specific approaches from these specific shipyards.

The U.S. shipyard industry is certainly up to the task of building polar icebreakers, and has the expertise, the capability, the critical capacity, and the unmatched skilled workforce to build these national assets. In fact, in a letter sent to this subcommittee nearly

5 years ago, SCA member companies urged the Congress, the Coast Guard, and the administration to authorize and fund our Nation's future strategic icebreaking needs.

While it is true the U.S. shipyard industry has not designed and constructed a heavy icebreaker in the past 40 years since delivering the *Polar Star* in 1976 and the *Polar Sea* in 1978, we have delivered several other icebreakers during this period. The medium polar icebreaker *Healy* was put into service in 2000, and is actually larger than the *Polar Star* and the *Polar Sea*. The *Nathaniel B. Palmer*, a smaller icebreaker specifically built for conducting scientific research for the National Science Foundation, was delivered in 1992. For icebreaking operations on the Great Lakes, the *Mackinaw* was delivered to the Coast Guard in 2005. In addition, the commercial icebreaking supply vessel, the *Aiviq*, was delivered in 2012.

These icebreakers were built in U.S. shipyards in the Pacific Northwest, along the gulf coast, and on the Great Lakes. I can tell you today there is strong interest in icebreaker construction from at least 10 shipyards located around the Nation, from the Northeast to California to the Northwest and again along the gulf coast and the Great Lakes region. This level of interest across the U.S. shipyard industrial base will ensure a robust level of competition for this project, which is certainly good for the Coast Guard and for the Nation.

The same is true amongst the supplier base for the shipyards. The 94 industry partners of the SCA have the capabilities, equipment, and technology available to support the building of polar icebreakers. There are multiple design solutions available that will create a competitive environment for all potential suppliers as they support the shipyards.

U.S. shipyards pride themselves on implementing state-of-the-art training and apprenticeship programs to develop skilled craftsmen and women that can build truly first-of-a-kind commercial vessels and the best Navy and Coast Guard in the world.

For instance, the steel requirements for a heavy icebreaker rated at Polar Code 1, the highest icebreaking requirement, is a steel thickness in the 50 millimeter range. Presently, U.S. shipyards building for the commercial container ship market handle, cut, weld, and form steels for ships that are at the 65 millimeter range, and of a similar grade to the Polar Code requirement. In addition, many of our shipyards work in heavy steel construction beyond ships, building structures for nuclear power plants that are 3 to 4 inches thick.

These are just a few examples of the critical skills that would be needed to build a polar icebreaker where our industry has recent and relevant experience.

As a final recommendation to the committee, to build these ships in a timely and affordable manner there must be precise and fixed Coast Guard validated requirements. There is language in the House 2017 defense authorization bill requiring the Coast Guard provide Congress and industry with validated operational requirements in the near term, and we believe this is a step in the right direction.

If there are validated and stable requirements in place, the time to construct a polar icebreaker, from the start of concept design to construction and then to delivery, would be roughly 7½ years.

Again, I would like to thank the subcommittee for inviting me to testify alongside such distinguished witnesses. As a representative of our Nation's private shipyards I can say with confidence and certainty that our domestic shipyards and skilled workers are ready to build the next generation of Coast Guard polar icebreakers. Thank you.

Mr. HUNTER. Thank you all. I was actually going to yield to Mr. Zeldin, instead of—because it is very rare that we have people here at all in this committee.

[Laughter.]

Mr. HUNTER. But with that, I am going to yield to Mr. Graves. I will ask questions afterwards.

Mr. GRAVES OF LOUISIANA. Thank you, Mr. Chairman, I appreciate that. Thank you all for being here today. This topic has certainly been a very hot one lately.

I am curious. Admiral Michel, could you possibly—and if others want to step in on this—could you possibly describe and compare and contrast the icebreaking capabilities of the United States, compared to other Arctic nations?

Admiral MICHEL. Yes, sir. They vary in capability. So, for example, at the high end you have the Russian icebreaking capability, which is substantial. I mean they have just launched a sixth nuclear icebreaker, the most powerful icebreakers on earth. They have got the most powerful diesel electric icebreaker that will ever be in service under construction right now. They have about 40 of those *Polar* class vessels, all the way from light all the way to very heavy.

Mr. GRAVES OF LOUISIANA. Are United States capabilities in the same league?

Admiral MICHEL. Sir, we have—for the United States capability we have the *Healy*, which is a medium icebreaker commissioned in 2000, and we have the *Polar Star*, which is a heavy icebreaker, the world's most powerful non-nuclear icebreaker. Ship is approximately 40 years old. And then we have the *Polar Sea*, which is not currently operational——

Mr. GRAVES OF LOUISIANA. So is that a yes or a no? Do you consider us to be in the same league, anywhere in the same league?

Admiral MICHEL. Well, clearly not, sir, in Russian capability. We do match better with some of the smaller Arctic nations who do have single or just a few vessels. Even Canada has more capability than the United States currently has.

Mr. GRAVES OF LOUISIANA. Thank you. Ms. Stiller, do you see icebreaking as being primarily a Coast Guard mission?

Ms. STILLER. Yes, sir. In fact, 14 U.S.C. 2 specifies icebreaking as one of the Coast Guard's missions, especially in national defense. And there was also a memorandum of agreement between the Department of the Navy and the Department of Treasury back in the mid-sixties, which has not been amended since, but also assigns Coast Guard with icebreaking capability during peace time, war time, and contingency operations.

Mr. GRAVES OF LOUISIANA. Mr. O'Rourke, do you see our capabilities as being sufficient? Do you think that we are on the proper trajectory in terms of changes in the Arctic and our capabilities?

Mr. O'ROURKE. I can't tell you whether our current trajectory is appropriate or not. That would call for making a recommendation, and I can't do that as a CRS analyst. What I can point out is what other people——

Mr. GRAVES OF LOUISIANA. Your secret is safe here.

[Laughter.]

Mr. O'ROURKE. What I can point out is that the Department of Homeland Security has a mission need statement that sets forth a need, potentially, for up to three heavy and three medium polar icebreakers. That is their statement of their own requirement that is on the books and against which Congress can measure the executive branch's activities.

Mr. GRAVES OF LOUISIANA. And Ms. Grover, do you see the current—when looking at the capabilities right now, *Polar Sea*, *Polar Star*, the status of those vessels, and you look at the status of the *Healy*, all of which are going to have to go through, in some cases, full-fledged refurbishment, do you—in your testimony I think you described mission gaps in there. Do you see any solution that is being proffered at this point to address the gaps when we simply don't have Arctic capabilities at all?

Ms. GROVER. No, sir. I don't believe there is any set plan for addressing the gaps just yet, although the Coast Guard is working on it.

Mr. GRAVES OF LOUISIANA. Do you view that as being a national security threat, not having capabilities?

Ms. GROVER. That is certainly not my decision to make. I understand that there are—that the Coast Guard has a set of missions for which they are required to be able to carry out in the Arctic, as in the rest of the U.S., and those include defense readiness, search and rescue, issues related to sovereign presence. And it seems like it could be difficult under some circumstances for them to carry those out.

Mr. GRAVES OF LOUISIANA. Ms. Conley, did you care to comment on the disparity and capabilities in the Arctic of the United States compared to other countries?

Ms. CONLEY. Yes, sir. It is difficult. The Russian Arctic is a completely different space than the American Arctic. The Russian Arctic is over 50 percent of the total Arctic coastline. Over 22 percent of Russian GDP and exports come from the Russian Arctic. That is why they have such extensive icebreaking capabilities. It is a vital commercial and economic space for them, and they have very ambitious plans to develop it.

I think, for the U.S., we have to be mindful—this is about U.S. national security. It is not in comparison to keeping up with Russian 40 icebreakers. We need to have capabilities to serve the American people, to protect the United States, to search and rescue, and oil spill response. And today we don't have the capabilities that we need to effectively do that. It is a strategic vulnerability that has been in existence for several years. I am so delighted we are waking up to this.

But unfortunately, the procurement plans are long, and we are going to have this gap with us for several years.

Mr. GRAVES OF LOUISIANA. Sure. Last question, Mr. Chairman.

Mr. Paxton, when you worked in the Senate, the most effective and capable staff director you worked with was who? And, remember, you are under oath.

Mr. PAXTON. Well, I worked for several very distinguished members of that committee.

Mr. GRAVES OF LOUISIANA. There is only one right answer to that question.

[Laughter.]

Mr. GRAVES OF LOUISIANA. I yield back, Mr. Chairman.

Mr. HUNTER. I thank the gentleman. The ranking member, Mr. Garamendi, is recognized.

Mr. GARAMENDI. I want to get a couple things off the table. We have been going round and round here, just plowing the same field over and over again. So let's get a couple of things off the table.

First of all, the lease option. Ms. Grover, you said that it is not feasible, it is overly expensive, and not available. Please expand on that.

And then, Admiral Michel, if you will deal with this. Is it viable? Is it not viable? Yes? No? Let's dispose of this issue.

Ms. GROVER. So, technically, it is feasible. The Coast Guard is required to use public vessels for some of their missions. And so, that means either they have to outright own the vessel, or they can operate it under a demise——

Mr. GARAMENDI. I understand that.

Ms. GROVER [continuing]. Lease, right? OK. So then the question is can they do that more cheaply than buying it outright. And generally speaking, I would expect that purchase would be less expensive, because when you figure in the profit for the ship owner, and the higher borrowing class for the private sector than the Federal Government.

Mr. GARAMENDI. So your answer is leasing is more expensive.

Ms. GROVER. So leasing is generally——

Mr. GARAMENDI. Is there a lease—is there a ship available in the near term—that is in the next 3 years—available for leasing?

Ms. GROVER. The Coast Guard believes there is not. And I don't have any reason to believe differently.

Mr. GARAMENDI. OK. Admiral Michel?

Admiral MICHEL. Well, sir, as far as heavy icebreaking capability, there is no vessel available for lease to provide heavy icebreaking capability. There are vessels on the global market that have the characteristics of a medium icebreaker, but the Coast Guard has not yet found one of those vessels that is suitable for military service without substantial refitting.

Mr. GARAMENDI. So the answer is leasing doesn't make any sense. Is that correct?

Admiral MICHEL. Not in the current scheme of things, sir.

Mr. GARAMENDI. Grover, is that correct?

Ms. GROVER. Generally speaking, purchase is the——

Mr. GARAMENDI. Are any of the——

Ms. GROVER [continuing]. Way to go.

Mr. GARAMENDI [continuing]. Witnesses disagreeing with that assessment, that leasing is not an acceptable option? All right. Enough of leasing.

Now, we have a gap. How can that gap be filled? Admiral?

Admiral MICHEL. Well, sir, the current plan is on the heavy side, is to either reactive the *Polar Sea*——

Mr. GARAMENDI. OK. July 24 you are going to give us an assessment of whether that is viable or not.

Admiral MICHEL. We are, sir. And I will flag to you that having talked with my folks who took a look at that vessel, that is going to be a substantial endeavor, much harder to do than the *Polar Star* for a number of different reasons. And we never really fully appreciated that until we had the vessel out of the water, as you know, which became available——

Mr. GARAMENDI. OK, so——

Admiral MICHEL [continuing]. Because of Congress' appropriation. Then we are going to have to take a look at the—a rolling recapitalization of the *Polar Star* is essentially what the other alternative is until we can bridge out. We are also going to figure out *Healy*, which is going to have to be synched up with that, and we have got some ideas on how we are going to SLEP *Healy* and do that in segments, so that we can keep that vessel online to the maximum extent possible.

Mr. GARAMENDI. So you really have no plan to deal with the gap?

Admiral MICHEL. Sir, the Coast Guard's requirements set forth in the High Latitude Study are for three heavies and three medium icebreakers. Currently——

Mr. GARAMENDI. So that is your 3x3 strategy.

Admiral MICHEL. That is what is required to meet Coast Guard missions, or fulfill Coast Guard missions, is three heavies and three mediums. Our——

Mr. GARAMENDI. OK. So, really——

Admiral MICHEL. And I have described to you essentially what our plan is, including the need for the construction of the new heavy polar icebreaker. That is integral, because we are only going to be able to keep the *Polar Sea* and *Polar Star* under any circumstances online for just enough to reach out to that new breaker, sir.

Mr. GARAMENDI. So I just heard you say one is not enough. We are going to need at least two heavy icebreakers to fulfill the mission as——

Admiral MICHEL. The Commandant has testified that we need at least two——

Mr. GARAMENDI. OK.

Admiral MICHEL [continuing]. Heavy polar icebreakers for self-rescue capabilities. And the President's statement——

Mr. GARAMENDI. That then takes us to the block buy, doesn't it?

Admiral MICHEL. Sir, that is actually one of the things that—and we are going to work with the Navy on that, and employ some of their expertise, as to whether that makes sense. That is going to require congressional action, because we do not have authority to do that.

We are also going to have to take a look at that arrayed against the budget requests and the actions of the Congress. The President——

Mr. GARAMENDI. Yes, I don't want to play ping pong back and forth between the Coast Guard and Congress. You are quite correct; we are going to have to make a decision. Are we going to commit the United States and our budget and appropriations to address the real need in the Arctic?

Now, icebreakers are but one. In 19 seconds I am going to raise the other four issues. Communications, we have not talked about communications much, but it is not worthwhile to have a ship up there that you can't communicate with. Domain awareness, we haven't talked about that, but that is another issue. Infrastructure, which has been discussed. Army Corps of Engineers, where are you with a deepwater plan? Have you even thought about it? If so, where and where, and how much? Icebreaking, we have gone round that enough times to circle the earth several times. And finally, your training program. These are the five critical issues that have to be addressed if, in fact, we are going to have any activity and any American presence in the Arctic.

Icebreaking, Admiral, we need very specific information from you and we need it right away, because we are going to have to pass a law here and the appropriations, or at least the budget, to go with it.

Communications, not spent time on that. We need that information. What kind of communication equipment? What kind of appropriations and monies necessary for the appropriate communications? Domain awareness, probably pretty much the same issue.

OK, you know what I need. Admiral, when are you going to deliver it?

[The information from Admiral Michel of the U.S. Coast Guard follows:]

> As noted in GAO's report on the implementation of the Coast Guard Arctic Strategy, some of the gaps identified concerning communications, domain awareness, infrastructure, icebreaking, and training are complex, and efforts to address them will extend beyond the timeline of the 10-year Coast Guard Arctic Strategy or Implementation Plan. Additionally, it is important to note the Coast Guard is not solely responsible for mitigating all of the capabilities in which gaps were identified. The Arctic Executive Steering Committee (AESC), led by The Executive Office of the President, was created to enhance interagency coordination in order to meet the nation's strategic objectives in the Arctic. The National Strategy for the Arctic Region (NSAR) and its associated Implementation Framework, recently updated in March of 2016, identify lead components and specific administration priorities.
>
> "The Progress Report on the Implementation of the National Strategy for the Arctic Region" (March 2016) details the status of U.S. efforts in the Arctic, outlining the advancement of the NSAR through programs overseen by specified Federal entities. All relevant NSAR documents can be found at the following webpage: https://www.whitehouse.gov/blog/2016/03/09/advancing-implementation-national-strategy-arctic-region. In addition to these documents, I'd like to share some highlights of Coast Guard contributions to the implementation of the NSAR.
>
> Maintaining communications capabilities in the Arctic is a challenge the Coast Guard continues to address. The seasonal deployment of our assets to the region during Operation Arctic Shield has allowed the Service to test capabilities and tailor operations in the region to adapt to these challenges. We currently use offshore cutter-based command and control platforms,

shore-based mobile command and control platforms, and seasonal air and communications capabilities together to address the unique challenges associated with operating in the Arctic.

As to maritime domain awareness in the Arctic, we have embraced a seasonal and mobile approach. This method counters the unpredictability of human activity by allowing us to concentrate our assets in the area they are most needed at any given time.

The Coast Guard has also actively engaged other Federal, State, local, tribal, international, and private stakeholders to enhance domain awareness in the Arctic through cooperative effort and info sharing. We recently conducted maritime domain awareness flights along the North Slope and over the Arctic Ocean to monitor maritime activity, assess response asset performance, and observe environmental conditions. We have also updated carriage requirements for the Automatic Identification System (AIS), extending applicability to all U.S. navigable waters, including the Arctic, enhancing our ability to identify and track vessels.

This seasonal and mobile approach has been effective in removing the need to construct, maintain, and staff permanent infrastructure in arduous and often remote areas. Operation Arctic Shield, featuring various combinations of integrated force packages operating in northern Alaska, takes place between July and September and involves a mixture of Coast Guard cutters equipped with flight decks, sea-going buoy tenders, aircraft, and shore forces. The upcoming Operation Arctic Shield 2016 (AS16) will include prepositioning assets at Kotzebue, Alaska, to increase our cutter and aviation presence in the region.

With respect to icebreaking, assured access to the Polar Regions is required to preserve our broad and evolving national interests. Providing this capability into the future necessitates recapitalization of our polar icebreaker fleet. Thanks to the support we have received from Congress, we are working to accelerate the acquisition of the first new heavy icebreaker, and we have begun planning for additional assets. The President's Budget for FY 2017 included $150M in support of this program to fund critical activities through the detail design stage. In March 2016, the Coast Guard held an Industry Day with over 90 organizations participating, followed by 48 one-on-one meetings with interested vendors. A robust industry engagement strategy, as well as a collaborative partnership with the U.S. Navy, are essential elements of the acquisition strategy.

Until new assets are delivered, the Coast Guard is committed to providing continued icebreaking capability. As part of settling on the formal bridging strategy, a Materiel Condition Assessment was recently completed on CGC POLAR SEA to thoroughly assess the condition of the vessel. This effort revealed the extent of the technical challenges that would be associated with any reactivation, and provided data to inform a follow-on Alternatives Analysis. The objective of this analysis is to compare a potential POLAR SEA reactivation to a POLAR STAR service life extension to determine the most prudent way ahead. The report will outline the bridging strategy to maintain heavy icebreaking capability while the Coast Guard proceeds with the acquisition. Preliminary steps to prepare for a Midlife Maintenance Availability on HEALY are also underway, including investigating the feasibility of segmented midlife maintenance projects to mitigate impacts to operations.

Improving our capabilities in the Arctic is a priority, and providing our Coast Guard men and women with the training and experience necessary to perform at their best in any environment is a key component of this. In addition to the yearly Operation Arctic Shield, exercises such as Arctic Chinook allow operators to practice techniques in Arctic environments. Arctic Chinook is a joint USCG and USNORTHCOM sponsored exercise. It is a live field training exercise (FTX) of the Arctic SAR Agreement that will exercise a response construct applicable across the Arctic region. International participation and an international observer program are providing the opportunity for cross-training and cooperation, as well as expanding the network of Arctic operators.

We have also created the Center for Arctic Study and Policy (CASP) as an academic center for Arctic maritime operations. The CASP builds a nexus

between operators, academics, indigenous community members, and policymakers on evolving Arctic issues.

Admiral MICHEL. Well, sir, the icebreaker is a critical part of that, because that is a mobile——

Mr. GARAMENDI. No, no. No more on the icebreaker.

Admiral MICHEL. Well——

Mr. GARAMENDI. We have gone around that game too many times.

Admiral MICHEL. Sir—well, I think you are missing the point here, sir. That type of a mobile platform can actually help you with providing a communications suite that is mobile. It can also provide maritime domain awareness with its sensor packages. That is the beauty of buying a mobile platform, sir, rather than fixed infrastructures. You can move that to wherever you need to. And having a capable icebreaker——

Mr. GARAMENDI. Point well taken. Thank you.

Admiral MICHEL [continuing]. Get that capability anywhere, sir.

Mr. GARAMENDI. Beyond the mobile, do we need fixed? And if so, what?

Admiral MICHEL. Right now the Coast Guard strategy is mobile and seasonal, because the human activity up there is very dynamic.

Mr. GARAMENDI. Stiller, Ms. Stiller, is that in the Naval strategy, to depend upon the Coast Guard?

Ms. STILLER. Sir, I am an acquisition professional, but I will be happy to take that back and get you an answer from the operations side.

Mr. GARAMENDI. Please do, thank you.

Ms. STILLER. Yes, sir.

[The information from Ms. Stiller of the U.S. Navy follows:]

In alignment with the "National Maritime Domain Awareness Plan" (which promotes global maritime security through improved understanding of the full spectrum of activity in the maritime domain), the Navy works with international allies and interagency partners, including the Coast Guard, sharing limited resources, to improve maritime domain awareness of the Arctic Ocean.

The Navy and Coast Guard leverage each other's capabilities in the Arctic. The Navy utilizes a myriad of National, Department of Defense and Coast Guard platforms—in space, sea, air, and on land—for Arctic communications. Coast Guard platforms, in particular, provide mobile, seasonal communication capabilities in the Arctic. The Navy will continue to deepen its operational relationship with the Coast Guard to support our shared interests in the Arctic, which include increasing commonality and interoperability, improving information sharing, emphasizing the use of common data standards, and fostering international and interagency partnerships.

The Navy and Coast Guard will continue to cooperate to be better prepared to jointly provide for homeland security and/or homeland defense when operating in the Arctic. The Navy will continually assess our preparedness in response to changes in the Arctic environment or changes in the security environment.

Mr. GARAMENDI. And for Mr. O'Rourke and Ms. Grover, thank you for your analysis. It is very helpful. I would like to have your analysis on the communication and the domain awareness, also.

I am well over my time, Mr. Chairman. Thank you.

Mr. HUNTER. I thank the ranking member.

I guess, Ms. Conley, one quick question. They said that in the 1960s the Treasury and the Coast Guard made an agreement that this is a Coast Guard mission. Is this a Coast Guard mission?

Ms. CONLEY. It is a whole-of-government mission. The Coast Guard has a clear leadership role in providing the capabilities needed, but I believe that Arctic security encompasses a much wider lens that includes assets from the Department of Defense, in addition to the Department of Homeland Security. It is a full package. We just haven't yet focused on the wider defense-related issues yet.

Mr. HUNTER. I would ask the whole panel. Why is this not a Navy mission? Why is it not a Naval mission? Besides that somebody said it is not 60 years ago, besides that answer.

Admiral MICHEL. Well, sir, the Navy and the Coast Guard came to an agreement that the Coast Guard would be the executive agency to provide——

Mr. HUNTER. Besides them coming to—besides that, tell me why. What is the reason it is not a Naval mission? Because you said——

Admiral MICHEL. I——

Mr. HUNTER. Wait, let me finish, Admiral. You said you can't lease a ship because they are not—there is no readily available militarily capable vessels. So what you are saying is there is no other—there is no military icebreakers to military specs like a destroyer that are available right now. I think we understand that. If we had those available in the U.S., they would be yours, and we would be using them.

There are icebreakers that can be used that aren't to military spec, but I would ask you—but besides somebody coming to an agreement prior to today, why is it not a Naval mission?

Admiral MICHEL. Well, just to be clear, sir, I didn't say that it was or wasn't a Naval mission. I said that it was a Coast Guard mission, and that we took responsibility that, in the 1960s, and as statutorily——

Mr. HUNTER. And look where we are.

Admiral MICHEL [continuing]. A Coast Guard mission——

Mr. HUNTER. And look where we are. So my question is, should this be a Naval mission?

Mr. O'Rourke?

Mr. O'ROURKE. It was a Navy mission shared with the Coast Guard for a period of about 20 years from the end of World War II until the handover in the mid-sixties, when it reverted to being a Coast Guard-only mission.

The history that I have read on that situation is that it was consolidated with the Coast Guard in the 1965–1966 period because the Navy at that time was facing a large modernization requirement to replace the many, many ships built during World War II that were, at that point, aging out in very large numbers, and that with a concern for their ability to replace all those ships and essentially rebuild the fleet, it was that concern, according to this history, that drove the transfer over.

As a matter of policy, Congress and the executive branch can agree that it can be a Navy mission, as well as a Coast Guard mission. But the history that I read suggests that it was the Navy's

modernization needs which were coincident with the Vietnam War that drove the decision in the mid-1960s.

Mr. HUNTER. Got you. So let's talk about with the Navy involved in this, given the $1 billion that has been appropriated—hasn't been passed yet, but the Senate has appropriated it—given the concerns we all have articulated regarding the timelines, let me ask you this. Could the $1 billion be used better if the Navy takes the lead in the acquisition, or the Coast Guard?

Can—given where they are, in terms of their professional acquisition systems and people and history of making ships? Put it—make it more simple. Who is best suited, the Coast Guard or the Navy, to acquire and build and set up the analysis and the parameters, the requirements, for an icebreaker?

Mr. O'ROURKE. If that question is to me, what I would say is that the Navy's expertise in shipbuilding and the Navy's expertise in executing block buy contracts could help the Coast Guard in an acquisition of two polar icebreakers that were to be done under a block buy arrangement.

That is not to say that the Navy is better than the Coast Guard, but the Navy does have expertise, especially in executing block buys that the Coast Guard has not done previously, so that if you were to take that expertise and leverage it in a whole-of-government fashion, it may allow the Coast Guard to do that acquisition better than if the Coast Guard were attempting to do it on its own for the first time.

Mr. HUNTER. Admiral, if you had—I don't know how to phrase this.

Mr. GARAMENDI. Does he agree?

Mr. HUNTER. Would you rather—yes, I mean, that is a good question. Do you agree with Mr. O'Rourke's assessment?

Admiral MICHEL. I think under any circumstances, sir, we are going to tap into the expertise of our Navy colleagues.

Mr. HUNTER. That is the new joint program office that we are setting up.

Admiral MICHEL. We already committed to that, sir, and that benefits both our agencies.

Mr. HUNTER. When it comes to the $1 billion, how—tell me how the Coast Guard views getting one vessel and saying that is $1 billion for one vessel, or what Mr. O'Rourke testified to earlier, that if you take the $1 billion, you could save a couple hundred million dollars, possibly, say $200 million, build two, buy all the lead-time materials, could get all the blueprints and the requirements done, and then come back to Congress and say, "OK, we are ready to roll and build two of these," and save a few hundred million dollars in the meantime?

Admiral MICHEL. Sir, I am only authorized the support the President's budget request, and that is $150 million, approximately——

Mr. HUNTER. But the Homeland Security——

Admiral MICHEL [continuing]. For the construction of a heavy polar icebreaker——

Mr. HUNTER. The Homeland Security analysis says three heavies and three mediums. You are not breaking any rules by saying you would like to build two at the same time, are you?

Admiral MICHEL. Sir, I am open to any discussions. The only thing I can officially support is the construction of a single heavy icebreaker. I am happy to work with the Congress and other stakeholders on what makes sense. I am not trying to do something stupid here. But the only thing that our budget request supports is the construction of a single heavy polar icebreaker.

Mr. HUNTER. What are we—what did Homeland Security come out with their analysis that says that they need three heavies and three mediums? What are we referring to there?

Admiral MICHEL. Sir, that is our outstanding requirement. The High Latitude Study says that, in order to fulfill Coast Guard mission, the Coast Guard requires three heavy icebreakers and three medium icebreakers. The President's budget request begins the recapitalization of that fleet. Our Commandant has testified we need at least two heavy icebreakers in order to provide self-rescue capability. And I would like to see a third, but that is going to have to be supported by future budget requests.

The acquisition of those, I am sort of open to any suggestion, and I can sort of support on what makes sense for the acquisition of those very expensive assets——

Mr. HUNTER. But if you are only allowed to talk about building one, then how can you get into it with the Navy on what a block buy and lead-time materials would do for you, then? Are you authorized to even discuss that?

Admiral MICHEL. Well, sir, we have got an ongoing dialogue. I mean you and I are talking about this right——

Mr. HUNTER. Well, I just asked you about it, and you said you can only talk about one.

Admiral MICHEL. I didn't say, sir, I could only talk about one. I said the only one I can officially support is the construction of a single heavy icebreaker, because that is what the President's budget request is. I am open to discussing any type of acquisition strategy that makes sense. I sit in a pretty high position in the Coast Guard and in the Government, and I talk to people all the time. And people are interested in doing good things. So I would like to keep the dialogue open.

The only thing I can officially support right now is the construction of a single heavy icebreaker, because that is the President's budget request.

Ms. STILLER. Sir, I would also point out that the SAC [Senate Appropriations Committee] add to the Department of the Navy is for a single vessel. So any authorities that, as we work together, we deem that we would need otherwise, we would be required to come back and request a legislative proposal through the system to ask for authorities like block buy. That is how we have typically done that in the Navy, as well, to bring forth the business case, per se, to present that to the committees to consider.

Mr. HUNTER. So tell me explicitly. What action would you need Congress to take, either the House or the Senate, to be able to do a block buy?

Ms. STILLER. We typically get block buy authority from our authorizers that says that we can enter into block buy authority for a particular class of ship, or a number of ships.

Mr. HUNTER. That would be in the—that is in the authorizing committee, so that would be the NDAA?

Ms. STILLER. Typically, sir, that is how we get it. I will defer to the Admiral on how the Coast Guard would get their authorities. But yes, sir.

Mr. O'ROURKE. It has happened both in authorization bills and in appropriation bills. It can be as little as a single sentence.

Mr. HUNTER. So this could be done in conference, theoretically, on the——

Mr. O'ROURKE. Congress must approve each instance of a block buy.

Mr. HUNTER. But I——

Mr. O'ROURKE. And Congress has done so in both authorization and appropriation bills.

Mr. HUNTER. On the NDAA conference, could the language be changed to allow this $1 billion to go towards a block buy?

Mr. O'ROURKE. Yes, it could be done in the NDAA conference, it could be in the conference on the DOD approps bill. And it is not complicated. The block buy authority for the Littoral Combat Ship was a single sentence in an appropriations bill that was actually a continuing resolution that bridged our funding for a few weeks.

Mr. HUNTER. Does it——

Mr. O'ROURKE. It is not——

Mr. HUNTER. Does it lock them into it, or does it give them the option?

Mr. O'ROURKE. Typically, what the language says is that the department in question, or the secretary of that department, shall have the authority to contract for some multiple numbers of ships. It is a single—it can be as simple as a single sentence, and that tends to be what it has been in the instances where we have had it.

Mr. HUNTER. OK. Then taking that, Admiral, what does that do to your Presidential authorization request for just one? What if that gets done—let's say that that sentence is put into the NDAA in conference, and it is passed in December, and—what then, concerning what the President's request allows you to talk about?

Admiral MICHEL. Well, sir, the Congress can choose to do what the Congress and its will chooses to do. If it chooses to buy multiple ships or appropriate different amounts of money, the Congress can do that. I am only authorized to support the President's budget request, which is $150 million for a single icebreaker.

If Congress chooses to give the Coast Guard or the administration additional authority, or chooses to appropriate any number of vessels or types of vessels, the Congress is a co-extensive branch of Government, and the Congress can do that in its will through enacted law.

Ms. STILLER. Mr. Chairman, if I could just make one comment to Ron's statement.

Mr. HUNTER. Yes, ma'am.

Ms. STILLER. Typically, when we get block buy authority, it is tied to the advance procurement line within the SCN [Shipbuilding and Conversion, Navy] budget. It is not tied to the full funding part of the budget. And right now, the way it is in the SAC mark, it

is in the full funding line. So there would have to be some sort of discussion to address that. That is my only point.

But we do—when we get it, we get the authority to use it if it makes sense.

Mr. HUNTER. Thank you.

Ms. Hahn, you are recognized.

Ms. HAHN. Thank you, Mr. Chairman. I would like to change the subject just slightly. I have learned that this fall Crystal Cruises is going to be taking passengers on an unprecedented cruise through the Northwest Passage. This ship will be accompanied by an escort icebreaker and a dozen expedition experts.

So, Admiral Michel, I was going to just ask you to what extent has the cruise line worked with the Coast Guard to ensure the success of this voyage. And we do know that the Arctic Circle can be known to be a dangerous region, due to the unpredictability of the ice and the sea. What contingency plans have been established, in the event of an emergency, to make sure that these passengers are safe?

Admiral MICHEL. Yes, ma'am. Well, we have been working with Crystal Cruise Lines here for a couple years on this. And I think Crystal understands the challenges associated with this venture, which actually, I think, is going to occur next month, in August. And we have not only been working with them, but also with the Canadian Coast Guard, with the Department of Defense, with local officials, and have mapped that out, that particular voyage, most of which, actually, is in Canadian waters. I think 85 percent of it or more is actually in Canadian waters. And the most treacherous parts are actually in Canadian waters. But we have bridged out and reached out to them.

We did a table-top exercise the last couple months, and worked through all the issues on there on how you would get people out of there, how you would take care of the life boats, how you would utilize that very small—it is an icebreaker, but it has become also an ice management vessel, is the way that they are going to use it.

But Crystal Cruise Lines is—for example, they are taking on board ice pilots, they are getting the latest on the ice situation that is up there. We think they have done pretty good homework. But I don't want to underestimate the challenges of that area. There is almost no logistics up there.

For example, if we needed to get another helicopter up there—they are only bringing very small helicopter with them. If they needed to get a big helicopter up there, it is estimated to take between 15 and 20 hours, if the weather is good, in order to get that up there. Fixed-wing aviation may be available, but even there you have got very limited landing areas, very environmentally sensitive areas. Things change up there dramatically. Even during the summer the weather is an incredible challenge.

So, this is not an easy category for a voyage. But I think we have done all the legwork that we can upfront here, and we do have a responsible operator in Crystal, who is taking a number of additional steps in order to ensure that they have got a safe passage.

Ms. HAHN. Thank you. Well, I represent the Port of Los Angeles. And between Los Angeles and Long Beach, clearly we are the busi-

est cruise ship terminals. And that is a huge part of our economy, and tourism in the area. So, you know, we have heard of late of some tragic circumstances aboard cruise ships, even in calm and warm waters, so this certainly is of concern.

Ms. Conley, I was going to ask you, just in your studies, and what you are predicting, what does the future hold for tourism in the Arctic? Is—I would love to hear your thoughts on that.

Ms. CONLEY. Thank you. Well, we definitely see an increasing interest. In some ways, because the Arctic environment is changing so quickly, it is sort of creating a rush, if you will, to see this pristine environment while it is still in its current state.

In conversations and in conferences that we have held at CSIS, where we have invited the cruise industry, they haven't necessarily seen a huge uptick. And in fact, I think the *Crystal Serenity* is a real trail blazer. And you know, as you have been noticing, the extensive media attention on that cruise itself, in addition to our Coast Guard colleagues that will be following it very closely, this may actually spur a great deal of interest.

The price tag is enormous per passenger, because of the extra safety requirements that are needed. For instance, the Russian tourism industry has been using their Russian icebreakers to take cruises up to the poles, literally, for quite some time. It is for that adventure ecotourism. So we are not seeing the numbers yet. It will be interesting to see if the *Crystal Serenity* does, in fact, show a real uptick in interest in cruising the Arctic.

Ms. HAHN. And Admiral, how much time and effort and resources does our Coast Guard expend for this specific cruise breakthrough of the *Crystal Serenity*?

Admiral MICHEL. Well, quite a lot, ma'am. This is the largest cruise ship that is ever going to go through this area. And, by magnitudes, the largest number of people are going to go through this area. So we have been working extremely closely, like I said, not only with the cruise lines, but everybody else who has an oar in the water here, on ensuring that we have got a safe voyage.

So this has taken a lot of our time, and we take this very seriously. And I hope we always will, because that is a very treacherous area of the earth——

Ms. HAHN. And do we get compensated for that?

Admiral MICHEL. Ma'am, we don't charge people for those type of services. Those are Coast Guard responsibilities. The taxpayers——

Ms. HAHN. Because it is interesting——

Admiral MICHEL [continuing]. Foot the bill for the Coast Guard.

Ms. HAHN [continuing]. As Ms. Conley pointed out, the passengers are paying—sounds like they are paying extra for extra security and some of the resources that you are so generously giving away.

Admiral MICHEL. I don't think we are—well, giving away——

Ms. HAHN. I mean, that is our——

Admiral MICHEL. This is what we do——

Ms. HAHN. I mean, that is our core——

Admiral MICHEL [continuing]. In the Coast Guard.

Ms. HAHN. Your core mission is, of course, to keep——

Admiral MICHEL. Yes, ma'am.

Ms. HAHN [continuing]. People safe on the high seas. But it is kind of an interesting world we are getting into. And as we always talk here, your resources are always limited, we are always trying to make priority choices. Sort of like contract sheriffs, you know, they charge other cities for their services. It would be interesting to look at that model some day.

Admiral MICHEL. Yes, ma'am. And we would like to invest the resources upfront to prevent an accident from happening, because if you actually have an accident and respond to it, it is a lot worse situation. So I would rather make the investment upfront with the cruise lines, see if we can buy as much risk down as possible.

Ms. HAHN. Thank you very much. We hope it is successful.

I yield back.

Mr. HUNTER. I thank the gentlelady. I now yield to the former chairman of this committee, whose giant portrait is right behind everybody, Mr. Young.

Mr. YOUNG. Thank you, Mr. Chairman, and I do appreciate the comment. A giant portrait. It is a giant Member, I just want you to know that.

So, Mr. Chairman, I was listening to the questions. And my concern to the panel is this is not new. And I don't see much progress. That probably concerns me the most. And it is sort of like, you know, we are just spinning our wheels. We are worried about tourism now, and we are going to take and—break the ice for tourism, and that is well and good. But what about the security aspect of it?

This administration, very frankly, is focused on the human and environmental dimension of the Arctic, and not on the security. And yet I see Russia every day growing with the established—I would call it headquarters. There are six new battalions in the Arctic, there is about seven new ports. This has gone on, and we are just sort of, oh well, it will happen some day.

Is there anybody really thinking about the effect—I know Finland and, I believe, the other countries close by have become more aware of potential—not only a threat, but taking over the resources. Has there been any discussion amongst any of you about this problem?

Ms. Conley?

Ms. CONLEY. Yes, sir, thank you. We actually concluded a pretty significant study that examined the Russian Arctic, looking at their economic interest, the changes to their security posture, and we concluded that, in fact, over the last several years there have been significant shifts in Russia's posture.

Now, you can explain that in different ways. Because Russia has a very ambitious economic vision for the Russian Arctic, they believe that the northern sea route will become some day a viable major transit route, and there is a lot of people that are quite skeptical about that. So they were putting in place very ambitious projects. They have very ambitious energy projects with the Yamal LNG project.

But clearly, over the last several years, they are developing using their military industrial complex. So when they announced previously that they would create 10 search and rescue centers across the Russian Arctic, that is a positive thing. We need more infra-

structure. But then it was announced later that those—in fact, those 10 centers will have dual use. They will be both operated by the military and civilian forces.

They have restructured their command. They have told us that they will have 50 new airfields in the Russian Arctic by 2020. They are placing—now these are small units, but they are capable units. And so you are scratching your head, going, well, this is a lot of change. We are not—no one else is repositioning itself; why are they doing this? And I think they are preparing to project their sovereignty, and concentrating on both projecting that sovereignty in the North Pacific and the North Atlantic.

The question for the United States is we have to evaluate this change and see if we must adjust our posture, enhance our security measures. As I mentioned in my testimony, other States have begun to make that shift. It is not big, it is not bold, but they are making those shifts. The U.S. has been studying the matter. The Senate Armed Services Committee has been very forward-leaning in arguing that and encouraging the Defense Department to create an operational plan for the——

Mr. YOUNG. I am about ready to run out of time. I love your answer, but——

Ms. CONLEY. Thank you. Sorry——

Mr. YOUNG. Mr. Chairman, I do apologize for that.

No, I am glad you answered that. This is for the Admiral.

Movement of Coast Guard monies to the Arctic, are you remembering the rest of the responsibilities you have under your wing: interception, fishing patrol, rescue? You are not going to diminish from that, are you? Especially district 17.

Admiral MICHEL. No, sir. We are committed, as we have always been, to our responsibilities in Alaska.

Mr. YOUNG. OK, all right. I missed Mr. Garamendi's comments. I am one that believes that we are not going to get a Coast Guard cutter for a long time. I really don't see the push. We need it, cutters. And I think Mr. Paxton and his shipbuilders are willing to build them.

Did you make any comments on the leasing concept? Have you analyzed this, or it is just coming from the other side?

Mr. PAXTON. Sir, we have no comment on the leasing side of things, other than we know there are vessels out there that could be leased, sir.

Mr. YOUNG. Well, because I just—you know, I am concerned, Mr. Chairman, the next—we sit here at this committee—maybe, God willing, you will be here for 10 years. Hopefully, I will be, too, or I may be in the deep sea, I don't know.

But we need something to be happening. We are not having anything really—we have the Arctic Council. Big deal. What have we done? We have some meetings. We have some more meetings and some more meetings and some more meetings. And I want to know. Is there going to be—not just this administration, I am not banging this administration—oh, I love to do it.

But is there any Arctic—real Arctic policy? Is there any—is anybody setting—do you want us to do it for you? If you do, we will screw it up. You guys have got the expertise in it. Is there anybody really coming together on what we are going to do?

Anybody can answer that. Then I am out of time, I know. Anybody can answer it.

Ms. Grover, you look anxious to do something.

Ms. GROVER. Well, the Arctic Executive Steering Committee was formed in early 2015 in part specifically for the purpose of trying to bring together all of the parties into a unified effort. But as for how that is going, I can't say. But yes, there are a lot of different parties involved in a lot of different efforts. And much of it is involved in discussion and exploration in the learning phase, essentially. And I think there would—we would all benefit from some additional leadership and strategic leadership.

Mr. YOUNG. Well, Mr. Chairman, if I may suggest, either we set the policy—because none of the groups are going to get together. We will have meetings and meetings and meetings again. I like that word, "meetings." And what I am saying, either we set up a policy or we set up a chief, period, by a legislative action. Because you are not going to get the Navy and the Coast Guard and the EPA and—all together. They won't agree to anything.

Maybe we need somebody to be the dominant factor, because I do believe the Arctic is going to be the biggest challenge we have, as a Nation. We are an Arctic nation, and the next 20 years is going to be the problem. We are so far behind right now. I look at the Russian fleet with its nuclear icebreakers, and I look at their establishments of where they put these little military base—we are really close to it. I can't see Russia from my house, I can tell you that. But we are pretty close.

I used to fly over it, by the way. You don't know that, but I had a lot of fun. Cost them a lot of money, too. But their radar doesn't work 35 feet off the deck, I want you to know that. They may not know that. You can fly right over there. Getting back is the problem.

But you know, we are getting behind. And I understand why they are doing it, Mr. Chairman, they have got—it is the resource icebox of—refrigerator of the world, and we are just sitting here.

So, Mr. Chairman, I don't have much I wanted to say, but I would like to see a position where we are going to say next year we have a policy on the Arctic. We need icebreakers. We will make that decision. I just don't think there is many people understand it. And we need a policy, militarily and security-wise. And just not on the Coast Guard's back, it is on everybody's back.

Mr. Chairman, I thank you for the extra time.

Mr. HUNTER. Thank you, Mr. Chairman.

Mr. Garamendi, you are recognized.

Mr. GARAMENDI. I was just thinking about our friend from Alaska. And one of his favorite things is fish or cut bait. We are coming to that point, I think. And so we are going to have to make some decisions here and put it in place.

Mr. Chairman, you were speaking earlier of the NDAA, and I believe that the $1 billion from the Senate is in the NDAA. Is that correct? I think that is correct. Senate appropriation bill.

Mr. O'Rourke just described different ways we could come to a conclusion here and set the policy in place. It is very clear to me that the administration is not in a position to make a definitive policy statement. They are kind of biding their time with $150 mil-

lion in the various—and then laying out some strategy into the future. And that is really a result of Congress not willing to appropriate money.

So I think in the next 3 months, as we get the information on the *Polar Sea*, and whether it can be refurbished or not, as we deal with the appropriation, as well as the NDAA, that we are in a place where we can make a decisive decision with regard to the future of the icebreakers.

My own preference here is to use the NDAA and/or the appropriation, or both, to lay out a block buy for at least two—well, let me just say for two new icebreakers to be built in the next 5 to 7 years.

I notice, Mr. O'Rourke, you laid out a projection of expenditures over the next 7 years for one icebreaker. I would ask the Admiral Michel to lay out a projection for block buy, two icebreakers over the next 7 to 8 years. And also, how that timeframe can be compressed to reduce the gap that everybody has talked about and that apparently is a very real gap in the ability to operate in the Arctic and Antarctic.

So I think we need to be very precise here. And, Mr. Chairman, I would encourage you in your leadership role in this to undertake a process that, when the NDAA is completed—the conference committee presumably is going to get underway while we are in recess—that we take up this issue, we build into that NDAA conference committee and the appropriation a specific plan.

My recommendation, once again, is a block buy, two icebreakers over the next 7 to 8 years. And in the next month, careful analysis by this committee as to whether we can refurbish the *Polar Sea* to address the gap issue, and what it might propose—might be available to us, beyond.

Also, it seems to me that there are the other five issues with regard to the Arctic and the Antarctic. The communications strategy, Admiral, I appreciate the communication—that is, the ship itself being communication. I think, however, that is going to be inadequate. Certainly the Navy issue is part of this. There are submarines, both ours and others, that will be operating in the area. So I think the communication issue needs to be fully vetted and brought to our attention so that if it is in our—I know both the chairman and I are on the House Armed Services Committee, and certainly that will be a piece of that puzzle, also. And domain awareness and communications I think are probably one and the same.

Infrastructure, the Army Corps of Engineers. What are their—and, Admiral, if you could, brief us on the infrastructure issue which has been raised. Does us little good to have a heavy icebreaker in the Arctic with no fuel and no ability to get fuel, except to return to Seattle.

And then finally, the training mission, which was part of your testimony. We will go into that in more detail, later.

Those are the five areas. I think we must be prepared, as a committee, to make a decision and get on with it and, frankly, commit the United States to spending the money to get the job done. You know, we have got a 2-year timeframe for our contracts for every 2 years, but I think we ought to commit the future Congress.

With that, I yield back.

Mr. HUNTER. I thank the gentleman. Mr. Sanford is recognized, as long as he doesn't advocate buying Russian icebreakers.

Mr. GARAMENDI. By the way, Mr. Chairman, I——

Mr. SANFORD. That is a much longer conversation——

Mr. GARAMENDI [continuing]. Am going to take my final 15 seconds——

Mr. SANFORD [continuing]. The Jones Act, but we will come back to that on another day. The—thank you, Mr. Chairman.

I guess, Admiral, first question would be, following up on my colleague from—well, Ms. Hahn's question with regard to cruise lines in the Arctic and your sharing of resources and capacity without charge, I struggle with that in that there is always unlimited demand for a product that somebody else is paying for.

Wouldn't there be a cost-sharing arrangements that could both benefit the taxpayer and take care of the safety needs that the Coast Guard is responsible for?

Admiral MICHEL. Sir, we have a, as a matter of policy, not charged for prevention-related services. Otherwise, what ends up happening is people do not engage with us to try to save money, and then they go out there and do stupid things that we have to clean up from.

So, as a matter of policy, we don't charge for search and rescue services for those reasons, sir.

Mr. SANFORD. Understood. But I think the question one would have to ask is when you go into the Arctic you are going into harm's way. And so to, in essence, offer incentive to go into harm's way would be the equivalent down in—off the coast of South Carolina is kind of a tropical wave or tropical depression to say we will facilitate your ability to go out into those waters as a, you know, coastal disturbance is headed our way. That seems to me to invite some level of peril that would not be the case if they were taking unsubsidized risk.

Admiral MICHEL. Sir, I can't disagree with you, that you can take that particular viewpoint. The Coast Guard's viewpoint is we would rather engage with stakeholders upfront to buy down risk and prevent a catastrophe from happening, rather than disincentivizing people from engaging with the Coast Guard, and then they go out and do something very tragic, particularly when you are talking about having 1,700 people on board, sir, who probably are just paying for a vacation and don't apprehend exactly the situation that they are going to get themselves into.

Mr. SANFORD. I hear you. I would like to come back to that question.

In the same regard, just in terms of taxpayer concerns, if I remember right the *Polar Sea* used to leave the Upper Midwest—excuse me, the Northwest, and take a—basically, a month-long trip down to the Antarctic, open up the channel for the once-a-year drop-off at McMurdo Station, and then take another month trip back. Might there not be a lower cost leasing, borrowing alternative to the—in essence, it is one mission—that would then free up capacity for the patrol of the Arctic, given some of our shared concerns with regard to Russian aggression or claims, et cetera?

Admiral MICHEL. Yes, sir. Well, part of the earlier discussion was whether, you know, leasing a vessel like that would be appropriate. As far as heavy icebreaking capability, there is no heavy icebreaking capability available for lease on earth that the Coast Guard is aware of, and we have looked around, sir.

Mr. SANFORD. Does anybody else open up channels in the Antarctic, as we do, going into McMurdo?

Admiral MICHEL. There have been three vessels that—well, there are a number of vessels over many years. That has been done over many, many decades. But I will talk here in the recent times.

So the National Science Foundation actually chartered for a vessel called the *Krasin*, which is a Russian medium—almost heavy—icebreaker to break open that channel. They also chartered the *Oden*, which is a Swedish icebreaker, to work in that area. And they also chartered a vessel called the *Vladimir Ignatyuk*. Each one of those vessels, to varying degrees, was able to do that.

For example, the *Oden* was able to actually work in that ice area. The problem with the *Oden* is it has very challenging open-water characteristics, so its ability to move down from Sweden down to work in that area was challenged because of its open-ocean characteristics. Plus, that vessel was actually pulled back on very short notice by the Government of Sweden when they had an icebreaking opportunity.

The *Vladimir Ignatyuk*, for example, could only work in the already-cleared-out channel, and would not have been able, on its own, to have—actually carve that channel. So there have been vessels that have worked down there to varying degrees of success, none of which are as capable as either *Polar Sea* or *Polar Star*.

Mr. SANFORD. Understood. But it could possibly be done through those kinds of leasing arrangement, and thereby free up 2 months of capacity for *Polar Sea* or its equivalent to be on patrol, in essence, in the Arctic.

Admiral MICHEL. Well, like I said, sir—and *Krasin*, for example, actually did that. But *Krasin* is a Russian vessel.

Mr. SANFORD. OK.

Admiral MICHEL. And really is no opportunity for the Coast Guard——

Mr. SANFORD. One last—I see I am down to 16 seconds, so let me interrupt, if I might. Two things, I guess. One, Ms. Stiller had a question with regard to Navy versus Coast Guard roles, and any degree of further differentiation, as you would see it, between those two roles.

And the last question would be, given the way in which different folks have asked the same question, which is if you were to pick a single linchpin—and this would be for anybody—that would make a difference with regard to perceived Russian aggression in that part of the world, it would be what?

Ms. STILLER. Well, sir, I am on the acquisition side of the house. But the Chief of Naval Operations was asked back in March in front of the Senate Armed Services Committee about the Navy's role in the Arctic, and whether we are meeting our operational missions. And we are currently, because we are doing that with undersea and air assets. So we don't require the icebreaking capability

that the Coast Guard provides as part of their mission for our operations right now, in the near term, in the Arctic.

Admiral MICHEL. I am not sure I exactly understand the question, but the Coast Guard is committed to this mission set. We believe that the MOU that was signed in 1965 is still the appropriate assignment of duties. The Coast Guard has put forth candidly our execution challenges.

And our single biggest investment and our biggest recapitalization priority for this particular mission set is a heavy polar icebreaker, sir. That provides you with the access and the ability to actually, by presence, project sovereignty. If you can't get there because you have been denied by the environmentals, you cannot project sovereignty. And that is our number-one recapitalization investment for this problem set, sir.

Ms. CONLEY. Sir, on your last question, just on the signaling to the Russian Government, I would argue that the United States needs to recognize the shift, publicly, that has occurred, that there are changes in their military posture that do cause us concern.

I think we need to arrest the withdrawal of forces, key forces that we are anticipating, the withdrawal of Army forces in Alaska, think about enhancing our force posture. It is signaling that we recognize this, and we are prepared to make necessary adjustments to our force posture, if required.

Mr. HUNTER. The gentleman yields back. Mr. Garamendi is recognized.

Mr. GARAMENDI. Mr. Paxton, you indicated that there are 10 shipyards that are capable of building a heavy icebreaker. Is that correct?

Mr. PAXTON. Yes, sir.

Mr. GARAMENDI. And they are prepared to do so.

Mr. PAXTON. Well, they are certainly interested, sir. At the Coast Guard's Industry Day there was 10 shipyards that showed up. They are all members of my trade association. Whether or not they will be building or partnering, they want to have a say in this, or at least a comment on it. So yes, there is high interest.

Mr. GARAMENDI. Very good. I want to make one thing very clear with regard to where I would come from on the policy of American built or foreign built. No way, no how will this icebreaker—one, two, or more—be built in a foreign shipyard. It will be made in America, period.

Mr. PAXTON. Yes.

Mr. GARAMENDI. Now, if we want to have a brawl, then we can fight about it. But it is going to be made in America, at least as far as I am concerned.

With regard to the nature of the icebreaker, Admiral Michel and Mr. O'Rourke, you lay out in your testimony, Mr. O'Rourke, the various capabilities of the icebreaker.

Mr.—Admiral Michel, I assume you have—this information comes from you, or from the Coast Guard. Does—have you had a chance to look at Mr. O'Rourke's testimony, and particularly the way in which he lays out the capabilities of the icebreaker, of the new icebreaker, the new, heavy icebreaker?

Admiral MICHEL. I have read his testimony, sir. I am not sure exactly which part you are describing.

Mr. GARAMENDI. Well then, let me proceed here. Mr. O'Rourke, thank you for laying it out in your testimony.

Admiral Michel, if you will take a look at that testimony and get back to us as quick as possible as to whether—it is appendix A of the testimony from Mr. O'Rourke—as to whether that is a reasonable or accurate recitation of the Coast Guard's requirements.

Mr. O'Rourke, where did you get that information?

[The analysis of Admiral Michel of the U.S. Coast Guard follows:]

> The section titled "Desired Capabilities for New Polar Icebreaker" in Appendix A of Mr. O'Rourke's written testimony represents a partial summary of the requirements delineated in the Operational Requirements Document (ORD), approved by DHS in January 2016. Specifically, this Appendix highlights Key Performance Parameters (KPPs) and other select elements. These items, when combined with the totality of operational requirements outlined in the ORD, describe the threshold capabilities for a new polar icebreaker. A copy of the ORD has been made available to industry for review.

Mr. O'ROURKE. That is from the Coast Guard's own Industry Day presentation and the briefing slides that they showed. So I am simply transcribing, more or less——

Mr. GARAMENDI. OK.

Mr. O'ROURKE [continuing]. What was on each of those briefing slides.

Mr. GARAMENDI. Good.

Mr. O'ROURKE. And I trust that I didn't do any violence to the content in copying it over——

Mr. GARAMENDI. No need to go further. I thought that was the case.

This document, or those—the recitation of those particular requirements would then be the foundation for a congressional authorization. Is that correct, Admiral Michel?

Admiral MICHEL. Yes, sir. Those—the capabilities that you mentioned there were actually—came from the Operational Requirements Document, which has been cleared by all the interagency partners setting forth those requirements, and——

Mr. GARAMENDI. And——

Admiral MICHEL [continuing]. That is the type of vessel that we need, sir.

Mr. GARAMENDI. Very good. Then what I am looking at is to get this thing underway this year in either the appropriation or the NDAA. And this recitation here describes what it is we would want built. Are you happy with what you gave to the—or what Mr. O'Rourke was able to get from you?

Admiral MICHEL. I am 100 percent happy, sir. That is exactly the type of vessel that we need.

Mr. GARAMENDI. All right, then. It is up to us to give you the authority and authorization, and not wait for the administration, which—I guess the American public will decide what that administration will be in the future, although I have my own ideas about what would be best.

I want to also deal with the infrastructure issue. It seems to me that that infrastructure issue is important. Ms. Conley, you lay out—very good, and I appreciate your testimony, because it gives us the larger context in which to consider these things.

On the infrastructure side, let's have a very quick recitation of the kind of infrastructure. Are we talking about a deepwater port near or north of the strait? Admiral?

Admiral MICHEL. Sir, that has been one of the things that we have talked about.

Mr. GARAMENDI. Well, no, let's not talk about it. Is it necessary to have a deepwater port near or north of the Bering Strait?

Admiral MICHEL. Sir, that is probably outside the Coast Guard's lane. There are Coast Guard requirements for that type of a port. So we would very much benefit from a deepwater port that is closer——

Mr. GARAMENDI. So the answer is yes, you would need a deepwater port to fully operate in the Arctic with a heavy icebreaker.

Admiral MICHEL. It would be very beneficial to us, but understand, sir, that when you get up into some of those areas, that may be only a seasonal port because not all that stuff is going to be ice-free, so you have to take that into account——

Mr. GARAMENDI. That is a very important issue, as to where the port will be located. Is it seasonal or not?

Ms. Grover, Mr. O'Rourke, Ms. Conley, what is your position on an infrastructure?

Ms. GROVER. Only that it is a significant investment to develop infrastructure in the area. And so we would yield to the Coast Guard's analysis of whether it would be worth it——

Mr. GARAMENDI. You don't have a position.

Mr. O'Rourke?

Mr. O'ROURKE. No position. I would just——

Mr. GARAMENDI. Ms. Conley, you——

Mr. O'ROURKE [continuing]. Highlight the fact that the—

Mr. GARAMENDI [continuing]. Want to give us the context of strategy, national strategy?

Ms. CONLEY. We urgently need more infrastructure. In addition to a deepwater port we need additional aviation assets, greater hangar space. We have to prepare for a much more significant response. And it is a comprehensive package. It needs to be a full strategy.

The fact that Shell has withdrawn and the question of Alaska's future energy picture has really delayed further infrastructure development that would have been a more public-private partnership. So now we have even taken a further step back on infrastructure needs.

Mr. GARAMENDI. OK. I guess my final question here really goes to our staff, and that is the infrastructure issue may be beyond the reach of this subcommittee. But I am of the opinion that we are not going to be able to achieve the goals and the requirements of this subcommittee unless we have infrastructure in place. And that is both the communication, as well as the port refueling and other kinds of facilities. And so, we ought to spend some time on that.

Thank you very much. I yield back.

Mr. HUNTER. I thank the gentleman. I am just going to throw this out here before I yield to Mr. Graves. I mean we asked for this information prior to the hearing, but did not receive it. We need the data that you have, going back from 2015 to as far back as you have it, for the *Polar Star* and the *Healy*, including the times the

vessels are transiting, the time the *Polar Star* spends in the Arctic and Antarctic, its time in port for maintenance work, and same for the *Healy*, its transit to the Arctic, conducting missions for operations and their time in port, please.

Admiral MICHEL. We will get you that, sir.

[The information from Admiral Michel of the U.S. Coast Guard follows:]

From fiscal years 2007 to 2012, the USCGC POLAR STAR (WAGB–10) was non-operational (in commission, special) in Seattle. The cutter was reactivated in June 2013 and conducted ice trials in the Arctic during that fiscal year. CGC POLAR STAR then completed Operation DEEP FREEZE 2014, 2015, and 2016 in McMurdo, Antarctica.

Table 1: Summary of employment days for POLAR STAR, fiscal years 2013–2015

USCGC POLAR STAR	FY13	FY14	FY15
Transit Days	25	61	47
Days in Arctic	33	0	0
Days in Antarctic	0	33	46
Underway Training	0	9	10
Inport/Maintenance	300	235	251
Inport Training/Logistics	7	27	11
Sum	365	365	365

From fiscal years 2010 to 2015, USCGC HEALY (WAGB–20) was annually deployed to the Arctic, and conducted missions in support of the Artic Icebreaker Coordination Committee. In addition, in January 2012, HEALY completed a 26-day unscheduled fuel resupply of Nome, Alaska, that is accounted under "Days in the Arctic" in fiscal year 2012.

Table 2: Summary of employment days for HEALY, fiscal years 2010–2015

USCGC HEALY	FY10	FY11	FY12	FY13	FY14	FY15
Transit Days	25	27	29	35	56	30
Days in Arctic	81	71	125	61	84	57
Days in Antarctic	0	0	0	0	0	0
Underway Training	29	31	11	16	11	21
Inport/Maintenance	182	210	158	224	143	158
Inport Training/Logistics	48	26	43	29	71	99
Sum	365	365	365	365	365	365

Mr. HUNTER. Thank you.

Mr. Graves, you are recognized.

Mr. GRAVES OF LOUISIANA. Thank you, Mr. Chairman. I want to follow up on Mr. Garamendi's last line of questioning.

Admiral, icebreakers, as Ms. Grover noted in her testimony, it is not a silver bullet to addressing all of the needs of providing all the capabilities in the Arctic, things like oil spills, mass casualties, terrorism events. Can you explain what is being done to address other capabilities, meaning non-icebreaking capabilities in the Arctic, to provide the Coast Guard or the Federal Government with the capabilities they need to respond to some of these other events?

Admiral MICHEL. Yes, sir. Well, our presence has been largely mobile and seasonal. So we use the vessels, whether they be icebreakers or not icebreakers. I mean buoy tenders—we have had

our National Security Cutter up there that—we use that type of a mobile presence. Plus, we have also established forward operating bases. We have done them at Dead Horse, Barrow, Kotzebue. These are temporary facilities during—primarily during the summer, where we provide services like search and rescue, aids to navigation work, working with the local tribal people for fisheries and forest, or protection of mammals, and all those types of things, our presence has largely been mobile and seasonal because the human activity has been so dynamic.

I know Ms. Conley mentioned about Shell. We had to move certain things when Shell was up there, but now Shell is not up there. So investing in permanent infrastructure up there is not where the Coast Guard currently is focused, although we look at that all the time.

Right now we like mobile and seasonal because we can move where necessary to match the human activity. And that is the beauty of having ships that can actually operate up there, because they come with a command and control suite, they can help with oil spills, they can help with search and rescue, counterterrorism, border security, fisheries enforcement, and you can move them as the seasons and as the activities and requirements dictate.

Mr. GRAVES OF LOUISIANA. OK, thank you. Next question, Admiral, earlier we talked a lot about heavy icebreaking capabilities, and you have gone back and forth into medium capabilities, the *Healy* being the medium icebreaking vessel that we have right now. Can you talk a little bit about acquisition strategy on mediums?

And I know the priority is the heavy, and I know your allegiance to the President's budget, but could you talk a little bit, looking forward on acquisition strategy for mediums?

Admiral MICHEL. Yes, sir. So you have laid out—the High Latitude Study also calls for three medium icebreakers. We have got the *Healy* current extant, but we actually have a requirement for a couple others. We have an integrated product team stood up, we want to develop an Operational Requirements Document, an ORD, for medium icebreakers, just like we have done for the heavy icebreakers. And that is a recapitalization need for the Coast Guard moving in to the future. So we have got a plan for that, as well, sir.

Mr. GRAVES OF LOUISIANA. When do you anticipate budget requests for that?

Admiral MICHEL. Oh, sir, I wouldn't want to speculate on that. We don't have the ORD done yet. And the ORD lays out those capabilities that Mr. Garamendi identified for the heavy. We have to have that agreement amongst the interagency partners as to what the interagency requirements are. So I wouldn't want to put a timeline on that, sir.

Mr. GRAVES OF LOUISIANA. OK.

Admiral MICHEL. I will agree to keep you informed as we move through the process.

Mr. GRAVES OF LOUISIANA. I would appreciate that. In fact, I am sure the entire committee would.

Let me go back to the first line of questioning Mr. Garamendi had, and there was something that was left, and I want to make sure I understand the ultimate conclusions.

So Mr. Garamendi asked the panel if leasing was an option. As I understand, basically folks said no. However, I heard a few things that seemed to contradict that, and I want to make sure I understand.

So Mr. Paxton said that there actually were medium icebreaking capabilities that were available. Ms. Grover said that the options were unaffordable. So just—I want to make sure I understand this.

So, number one, are there private capabilities that are available to the Coast Guard for leasing? Just yes or no.

Admiral MICHEL. There are none available, sir, that are suitable for military service without substantial refit.

Mr. GRAVES OF LOUISIANA. OK. And so then, Ms. Grover—and, Mr. O'Rourke, I will come to you in 1 second—Ms. Grover, in regard to your statement earlier—and I don't want to put words in your mouth, but I think you said that they weren't—I don't know what word you used, but affordable to the Federal Government. Could you just explain where that information is from, if—earlier it appeared that folks were saying there weren't even capabilities there.

Ms. GROVER. Sure. It is that leasing, relative to purchase, is generally going to cost more because of profit and interest——

Mr. GRAVES OF LOUISIANA. Sure. But also I just want to make clear that we have all acknowledged that there is a gap in capabilities here. And so in some cases, if there is a gap, then we may have to pay a premium, perhaps. And I am not verifying or confirming there would be a premium paid. But if we don't have capabilities, then we may have to pay extra in order to fill that gap. Would that be fair?

Ms. GROVER. If there were a vessel that was suitable for——

Mr. GRAVES OF LOUISIANA. Sure, sure.

Ms. GROVER [continuing]. The Coast Guard, they could——

Mr. GRAVES OF LOUISIANA. OK.

Ms. GROVER [continuing]. Enter a demise lease.

Mr. GRAVES OF LOUISIANA. Great, thank you.

Mr. O'Rourke?

Mr. O'ROURKE. Yes, I just want to emphasize that we are talking about two different forms of leasing here. Ms. Grover's testimony was focused on a long-term lease as an alternative to purchasing a ship for a 30- or 40-year expected service life. There is also a separate question of whether you would want to do a short-term lease for temporarily filling a gap prior to the time that new U.S. icebreakers come into service.

In my testimony I used the term "charter" to try and differentiate this shorter term scenario from the longer term one that Ms. Grover talked about. The shorter term ones would depend upon the availability of the ships for those shorter term charters, and the capabilities that they would bring, the prices that you would charge, and whether that would make sense, from our point of view.

Mr. GRAVES OF LOUISIANA. Sure.

Mr. O'ROURKE. We have done that in the past on at least three occasions since 2005, and it might be possible to do it in the future,

depending on the availability and cost effectiveness of that option. But those are short-term charters, as opposed to the long-term lease, which is an alternative to a purchase.

So we always have to keep that in mind, and that is why we can sometimes get cross-talk on the issue.

Mr. GRAVES OF LOUISIANA. Great, thank you. And I think that is a really important distinguishing factor here, is that we are not talking about leasing to supplant the ultimate acquisition of a Coast Guard vessel, but simply to complement this strategy where we have gaps that folks have identified in their testimony.

And Mr. Chairman, if I can have a little bit of latitude, I promise I will shut up after this. Thank you, Mr. Garamendi.

Mr. Paxton, let me give you one more chance. You seem to—last time, for the record. CRS noted in their testimony that there may be cost savings as a result of building more than one vessel, or piggybacking on an existing Navy or Coast Guard contract that is underway because of the ultimate reduction in overhead costs and others. Could you comment on that?

Because, look, let's be clear, $1 billion for one vessel is an extraordinary figure, and I just want to understand, looking at costs down the road and other acquisition strategies.

Mr. PAXTON. Yes, sir. Thank you, Mr. Graves, for the question. Certainly with block buys you can get long lead-time materials, you can have an acquisition strategy that allows you to put workforce in place to manage multiple construction of vessels. So you can really drill down on your processes to get better cost savings in the long term. I believe Mr. O'Rourke mentioned if you have two ships you might have a savings of about $100 million. That is real savings. That is why you would want to do it that way.

I think also, as an industry, our shipyards really strive to get their processes down. When you have a lead ship and you build just one ship, a lead ship, you don't get your chances to get your processes down because it is a lead ship and you are only building one. Hence, it is expensive. But if we build three heavies and three mediums, you are going to get a cost savings there, because the shipyards are going to strive to get those processes streamlined, they are going to have long lead-time materials that they can purchase in block, and they can really drive down expenses.

So, I think there is enormous value to the taxpayer. And also we have heard from all the panelists there is a national security need to do this. So if we are going to do it, I think we should do it in multiple contracts.

Mr. GRAVES OF LOUISIANA. Thank you, Mr. Paxton, very, very helpful.

And Mr. Chairman, for the record, as I recall, I think Mr. Paxton—on the fifth time he proposed to his wife she said yes. So just a——

[Laughter.]

Mr. PAXTON. Yes, that is great. Thank you, sir.

Mr. HUNTER. I thank the gentleman. Mr. Young is recognized.

Mr. YOUNG. One of the deficiencies in the Arctic is the lack of hydrographic and coastal survey data. I know NOAA [National Oceanic and Atmospheric Administration] is doing this right now, but under title 10 the Navy has a responsibility. How far along are

we in that? And are you sharing that with the other interested parties?

Ms. STILLER. Sir, again, I am an acquisition professional, but I will get you the right answer. But yes, we do partner with NOAA and others. In fact, we have built vessels within the SCN account for NOAA to do that research.

Mr. YOUNG. But have you shared—because I know you have done quite a bit of work. Has that been shared now?

Ms. STILLER. As far as I know, yes, sir. But I will get you that——

Mr. YOUNG. Would you get back to me on that?

Ms. STILLER. Yes, sir.

[The information from Ms. Stiller of the U.S. Navy follows:]

> Most of the Navy's modern Arctic bathymetric data is collected by submarines. The Navy has already declassified and released as much existing Arctic Ocean bathymetric data as possible. In addition, the Navy has established an ongoing process through which additional Arctic bathymetric data is released as quickly as possible after submarines transiting the Arctic return to port. Bathymetric data released publicly by the U.S. Navy continues to be the main source of data used by the International Bathymetric Chart of the Arctic Ocean (IBCAO).

Mr. YOUNG. I am going back to—I will get the elephant out of the room here, in a sense.

During the Shell activity there were anchor-layer icebreaking-capable ships. Is that correct, Mr. O'Rourke?

Mr. O'ROURKE. There was one that was actually built to support Shell's operations, and it was a privately owned ship.

Mr. YOUNG. That is right. It is a privately owned ship. It has tremendous capability of icebreaking power and the bow. If that could be retrofitted in 1 year's time or year and a half, that would fill that gap. Would you be interested in that, Admiral, if that was to take place?

I know you have the proposal on your desk, by the way. It has already been laid on your desk, and it is an automatic no. Why?

Admiral MICHEL. Sir, our Commandant actually personally visited that vessel, and we are of the opinion that that vessel is not suitable for military service without substantial refit, and I can go into——

Mr. YOUNG. But that——

Admiral MICHEL [continuing]. The reasons why, sir.

Mr. YOUNG. But wait a minute, stop. You think so. But if the shipbuilder said that he—"I can take and meet your requirements with the bow that it has now, tungsten steel, heavy, and the power to do it," see, because I—by the way, Admiral, I have been through this now—I have been here when we built the *Healy*, you know. I know what I am talking about. And you have always hated the idea of not owning the ship. But we have a gap here that has to be put in place.

How are we going to do it, if you don't accept another vessel? American-built, American-manned, American-maintained. Why can't you accept that? Because you are not going to get a Coast Guard in 10 years. Why can't you accept that? If it can't do the job, you don't pay them. Answer?

Admiral MICHEL. Sir, our current opinion is that ship is not suitable for military service without substantial refit.

Mr. YOUNG. See, and that is what I call, Mr. Chairman, a bullshit answer. Military service.

Mr. HUNTER. I thank the gentleman.

Mr. YOUNG. I talk about—I am talking about moving ice.

Mr. HUNTER. All right. Let's get into that, if you don't mind, Admiral. Let's go on the mil specs. So I am reading this. The Coast Guard polar icebreaking mission has four parts: breaking out McMurdo Station and providing some show of U.S. sovereign presence in the Southern Ocean. Does that require a military vessel or an icebreaker? I am just asking logically——

Admiral MICHEL. Sir, the Coast Guard only operates military vessels.

Mr. HUNTER. Does that require a military vessel to do that, what I just said?

Admiral MICHEL. Sir, the Coast Guard only operates military vessels.

Mr. HUNTER. Has—does a non-military vessel ever break out the McMurdo station?

Admiral MICHEL. Yes, it has.

Mr. HUNTER. OK. So I am going to ask it again. Does it take a military vessel to break out the McMurdo Station? That is a yes or no answer, Admiral. That is all you got to give me.

Admiral MICHEL. No, sir, but not in Coast Guard service.

Mr. HUNTER. OK. To provide an Arctic research platform, does that require a military vessel?

Admiral MICHEL. No, sir.

Mr. HUNTER. Meeting the Coast Guard maritime safety, search and rescue, fishery law enforcement, oil spill response in the Arctic, does that require a military vessel?

Admiral MICHEL. For the Coast Guard, yes, sir.

Mr. HUNTER. Does that require a military vessel, though?

Admiral MICHEL. It——

Mr. HUNTER. And when you——

Admiral MICHEL. I think you prefaced that with Coast Guard requirements. Yes, sir. We don't operate non-military vessels, sir.

Mr. HUNTER. I didn't ask if you would operate non-military vessels. I am asking you can a non-military vessel provide for search and rescue?

Admiral MICHEL. Yes, sir.

Mr. HUNTER. Fishery law enforcement, oil spill response?

Admiral MICHEL. Fishery law enforcement? No, sir. That requires a law enforcement vessel of the United States, a——

Mr. HUNTER. A law enforcement vessel——

Admiral MICHEL [continuing]. Military vessel.

Mr. HUNTER. Then a military vessel.

Admiral MICHEL. Yes, sir. Law enforcement——

Mr. HUNTER. But you need——

Admiral MICHEL. The Coast Guard vessels are both military vessels and law enforcement——

Mr. HUNTER. I mean what do—do you need a CIWS on this, or—what—do you need to shoot rockets or missiles off its surface? What are we talking about when you say military vessel?

Admiral MICHEL. Sir, a military vessel of the United States is classified as a war ship under international law. It has certain privileges and immunities that go along with that. A military vessel of the United States is built to military specifications for military interoperability, for military survivability, for damage control——

Mr. HUNTER. Let me——

Admiral MICHEL [continuing]. For water-tight integrity——

Mr. HUNTER. But let me ask Mr.——

Admiral MICHEL [continuing]. For propulsion systems. And they are not built to commercial standards, sir.

Mr. HUNTER. Is the Littoral Combat Ship totally built to military specifications?

Ms. STILLER. Mr. Chairman?

Mr. HUNTER. Mr. O'Rourke or Ms. Stiller, you could both answer that, I guess.

Ms. STILLER. The LCS is built to Naval Vessel Rules, which includes some commercial specifications but they are militarized, so yes. And in fact, in the case of LCS, right now we have completed our Total Ship Survivability Trials on both variants, and we are into the Full Ship Shock Trials to prove out that we accurately met the design parameters for those ships.

For the Independence variant, we have already conducted two of the tests. We have one more to go, and then, for the Freedom variant, we are going to conduct the test in August. But yes, sir——

Mr. HUNTER. I understand. I don't want to get too deep in the woods on LCS. So—but I just don't understand. One of the Coast Guard's excuses for not using a leased vessel or a less expensive vessel is that it is not a military-type vessel, yet the Navy put a lot of money into a lot of ships—it is changing now, but into a bunch of ships—the future of the Navy was the LCS—at that time, and that was not a—that—they didn't require a military vessel for those ships.

So you are telling me that the Coast Guard, to break ice—I am just using logic here, not semantics—to break ice needs a more militarized vessel than the Navy does, in terms of survivability? I don't understand.

Ms. STILLER. Sir, I am going to defer to Admiral Michel here, but what he is talking about is we do design and build these ships to military standards in certain areas. And you can have a blend of military-commercial standards across——

Mr. HUNTER. That is not what he said.

Ms. STILLER. It depends on the vessel. But I would say that it—but it is to the war-fighting capability and the protections you have as a war-fighting asset. I think that is where you are going on that.

Admiral MICHEL. Boy, this is—I mean there is a lot in your question there, sir.

First of all, these are multimission assets that the Coast Guard operates. They don't just break ice. They assert national sovereignty, they conduct law enforcement.

Mr. HUNTER. And I just asked you—Admiral, hold on. I just asked you four things, the four things that an icebreaker has to do, and you said it doesn't take a military ship to do any of them. I

asked you does it take a military ship to do these four things. You said no, no, no, and no.

Admiral MICHEL. Sir, and that is not the totality of what a Coast Guard cutter does. I think we have got a misapprehension here, sir, on what the characteristics of these vessels are. The Coast Guard operates Coast Guard vessels, we don't just—this is not a pickup game for the Coast Guard. We have very specific requirements for our vessels, including international law requirements for assertion of things like navigation rights.

Mr. HUNTER. OK.

Admiral MICHEL. This is a very—I think maybe you—sir, and I am happy to—I know you think I am being nonresponsive, but I am not. I am happy to have this dialogue with you on what this vessel is. This vessel does not just break ice, just like the *Polar Sea* and *Polar Star* just do not break ice. Those are the assertion of national sovereignty through war ships of the United States, military vessels operated by an armed force of the United States, the Coast Guard. I think maybe we have gotten——

Mr. HUNTER. Got you.

Admiral MICHEL. I think that is where our gap is, sir.

Mr. HUNTER. And again, we are never going to see one of those while any of us are here. Mr. O'Rourke might be around for a long time.

One last thing here, and then I am going to yield to Mr. Garamendi and we will close. And thank you very much for giving us a little bit of extra time here.

I guess the biggest question is—which we have all talked about—the gap, 3- to 6-year gap. We all agree we need to build a heavy icebreaker. Going to get $1 billion possibly coming up. That is going to go towards building a heavy icebreaker, maybe accelerating a medium icebreaker being bought. Will you guys even look at that, to go in a heavy and a medium, as opposed to two heavies?

Admiral MICHEL. Sir, I am open for all options.

Mr. HUNTER. OK. So one potential bridging mechanism the Coast Guard has touted for years is the reactivation of the *Polar Sea*. In 2012 this subcommittee—that is before I was here—this subcommittee had to pass law directing you to analyze the reactivation of the *Polar Sea* and provide Congress that analyzed—that analysis by 2013, September, almost 3 years ago, with a determination of whether the reactivation was cost effective. Not just an analysis on how messed up the boat was, but whether it is cost effective to fix it.

You did the analysis, but failed to make a determination. So in a week or two you are going to provide this committee, once we are out, another analysis of reactivating the *Polar Sea—Polar Star*. Let me ask you this—*Polar Star*, right? Sorry, *Polar Sea*.

Admiral MICHEL. *Polar Sea*, sir.

Mr. HUNTER. *Polar Sea* is broken. Star is working. Are you going to give us a determination on the cost effectiveness on the 24th? Are you going to come out and say, "Here is what we see wrong with it, here is what it is going to cost to fix it, and we determine that that is too much," or, "that sounds good"?

Admiral MICHEL. You are going to get everything but the last part, sir. We are going to give you the cost, we are going to give

you the materials, the engineering challenges, and so on and so forth. The actual alternatives analysis, that is arrayed against the broader problem set. That is what is due by the end of the calendar year.

Mr. HUNTER. OK. OK. Mr. Garamendi, I yield to you.

Mr. GARAMENDI. Mr. Chairman, I want to thank you and your staff and my staff for really pushing this issue forward, and for the witnesses. Some of you have been here multiple times.

I think the fundamental issue is before us, before Congress, as to what—and to explicitly state what it is that the administration is going to do. And I would propose that over the next 3 months, as the NDAA and the appropriation process go forward, that we take upon ourselves to set the policy in place. And for me, the policy that would make the most sense is one that would authorize and, in fact, tell the Coast Guard to build two, perhaps three, heavy icebreakers, or two and perhaps a medium icebreaker in a block buy, and to get on with it in an expeditious way, using the information that the Coast Guard has developed as to the capabilities of the heavy icebreaker. And perhaps also the medium icebreaker. I think that is a decision that we have to make.

We cannot depend upon the administration. It will be a new administration, they will take some years or year or more to get their act together, and that is just the way it will be. Not that either are incapable, it is just that transition that will determine that.

So, with that in mind, there is one additional issue, and, Mr. Chairman, you have made this, I think, very clear in the most recent colloquy that you had with Admiral Michel about what is military. And I notice our colleague from Alaska has left, but this issue of military-capable is one that we need to come to grips with here, because it is filling the gap issue.

And I think—not think, I believe that we must decide how best to fill this gap. We don't have that information until the 24th of this month. And therefore, on the 24th we will have from the Coast Guard their analysis of the *Polar Sea* and its potential.

Ms. Grover, Mr. O'Rourke, your very quick and necessary analysis of that proposal is essential. And I would ask the chairman to request that you get that quickly back to us so that when we return here in September we will be able to make a decision as to whether to proceed with the *Polar Sea* or not. And we need your capable analysis to do that.

I am in the mood to make a decision. You know, I know that both the chairman and I are up for a new contract. I think that both of us, hopefully, will be here to carry on. But before our new contract is up, Mr. Chairman, I suggest that we make a decision and push this issue—not push it, but set it in place so that the next Congress and the next administration will know precisely what it is that they are to do.

And with that, we have got some work out ahead of us. I look forward to it. Very, very important hearing, Mr. Chairman, I thank you for the time. And for the witnesses, I thank you for your engagement on this issue.

And by the way, we are going to make it in America.

Mr. HUNTER. We are going to make it in America. I would ask—I think what Mr. Garamendi is referring to is not the analysis of

alternatives that comes at the end of the calendar year, but what is wrong with the ship which comes in a week or two. I think that once you two look at that, I think you can beat the Coast Guard by months on what your alternatives analysis is. I think you can do that.

It takes them—I mean it has been since 2012, so it has taken them 4 years to give us this much, right? Let's try to—and maybe you could get us that, and we can start working this ahead of receiving whatever we receive in December 30 or 31. I take it that is when we will get it. That is the end of the calendar year, December 31. OK, I was right, all the way to the end.

Admiral, I also would like you to give us, to this committee, look at what Ms. Grover said, that you have to have—you are not allowed to have Coast Guard on leased vessels. Was that correct?

Ms. GROVER. Not on a short-term lease, because——

Mr. HUNTER. A charter, let's call it charter, like——

Ms. GROVER. Yes, not a short-term lease or a charter, because of what the admiral was stating before, that the vessels have got to be able to carry out the ports, waterways, coastal security mission, the law enforcement mission, and a sovereign presence, which means a short-term charter or lease it out, because it wouldn't qualify as a public vessel.

Mr. HUNTER. OK. So give me this, Admiral, if you could. Could you assist this committee with drafting assistance so—to know how we would change that, if we wanted to? OK?

Admiral MICHEL. Yes, sir.

Mr. HUNTER. Yes, sure. Go ahead. I yield to the gentleman.

Mr. GARAMENDI. Mr. Chairman, we—at least I am of the mood to make some decisive decisions here, and to write law. And I would request drafting assistance from the Coast Guard, and—to achieve that goal.

Mr. HUNTER. And, Admiral, last thing. We still haven't talked about the 3-year gap. Right? You haven't told us yet today—we have all talked about it, I think, but you haven't told us how you are going to fill it. So I will leave the last statement to you here to tell us definitely how you are going to fill the 3-year gap.

Admiral MICHEL. So what is currently on the table is a rolling recapitalization of the *Polar Star*, a reactivation of the *Polar Sea*, and how we are going to fit *Healy* into that, and that is the current situation, although we are out there looking for other types of vessels or capabilities that may be brought into the fight. That is what we currently have on the table, sir.

Mr. HUNTER. So can you plug the 3-year gap—you are telling me there will not be a 3-year gap in an icebreaking capability. You guys have it under control. Worst case scenario is what you just said.

Admiral MICHEL. I think, sir, that a rolling recapitalization of the *Polar Star* is achievable. I think that it can be done within the operational parameters as I have described to you before——

Mr. HUNTER. When would that happen, 2023?

Admiral MICHEL. It—5 to 7 years from now is the projected end date, so that is 2021 to 2023 under the current recapitalization. Under a rolling recapitalization, we can buy several more years out of the *Polar Star*. Whether we want to bring *Polar Sea* on is the

analysis that I owe to you, and I have got a *Healy* SLEP I have also got to deal with.

Mr. HUNTER. So say that you—we decide to say, OK, let's go with *Polar Sea*, put in all new engines, and update her, and put her in the water. When would that start? So let's say you came out and you said, "We analyzed, we looked at it, it is going to be $1 trillion."

We said, "All right, here is $1 trillion. Go."

Admiral MICHEL. Well, I think—I mean we could start on the design work relatively soon, but it is going to require an appropriation. As I described before—and I am going to give you the entire report—that—it took us about $70 million to recapitalize *Polar Star*. This is going to be multiples of that, sir.

Mr. HUNTER. But I am talking timewise. Would it be done in time to fill the gap——

Admiral MICHEL. Absolutely, and that——

Mr. HUNTER [continuing]. By 2023?

Admiral MICHEL. And that is part of the alternatives analysis is what you are going to have to do is you are going to have to time it so that you can recap *Polar Sea* so when *Polar Star* is coming off the line you have got the ability to have *Polar Sea* built out there. And all that has got to be synched up with *Healy*, yes, sir. That is the difficulty in pulling an alternatives analysis.

I can give you a material condition of a ship relatively quickly. But to make the actual decisions and to get the appropriations lined up and all the other things, that is a complicated dance, and that is why it takes a while to do that, sir.

Mr. HUNTER. OK. Would you also provide us with not just drafting assistance for the leased vessels, but how we would change the language to do a block buy? And I would ask all of you that, if you have a specialty, and if you know how to do that, because we probably do, too, but it would be easier to just have you tell us, because you are smarter.

Admiral MICHEL. Yes, sir. And we will work with the Navy on that. They have more experience than we do with that, and we could definitely work with you on that, sir.

Mr. HUNTER. Because if we could possibly do that this year in conference or in something else, so that would be great.

So, ladies and gentlemen, thank you very much. So thanks for being here, thanks for going over 2 hours. And with that, the hearing is adjourned.

[Whereupon, at 12:12 p.m., the subcommittee was adjourned.]

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TESTIMONY OF
ADMIRAL CHARLES D. MICHEL
COAST GUARD VICE COMMANDANT

ON
"COAST GUARD ARCTIC IMPLEMENTATION CAPABILITIES"

BEFORE THE
HOUSE COAST GUARD AND MARITIME TRANSPORTATION SUBCOMMITTEE

JULY 12, 2016

Introduction

Good morning Mr. Chairman and distinguished Members of the Subcommittee. It is my pleasure to be here to discuss the U.S. Coast Guard's expanding mission demands in the Arctic.

The Coast Guard is the world's premier, multi-mission, maritime service responsible for the safety, security and stewardship of U.S. waters. At all times a military service and branch of the U.S. Armed Forces, a federal law enforcement agency, a regulatory body, a first responder, and a member of the U.S. Intelligence Community, the Coast Guard operates on all seven continents and throughout the homeland, serving a nation whose economic prosperity and national security are inextricably linked to vast maritime interests. We safeguard the nation's maritime interests through our broad authorities, unique capabilities, and vast partnerships.

To ensure our service is aligned with national strategies and best positioned to address these complexities, we have developed a five-year Strategic Intent and continue to focus on our Western Hemisphere, Arctic, Energy and Cyber strategies. By using these strategies as guideposts, leveraging the intelligence community, and employing a risk-based approach to direct our resources where they are needed most, we are able to address maritime threats with greater precision and effect.

Indeed, the Coast Guard is fully engaged answering the call and balancing a multitude of dynamic maritime risks facing our nation. Guided by the National Strategy for the Arctic Region and our own Arctic Strategy, we are taking a proactive, but measured, approach to the increasing mission demands in the Polar Regions.

Increasingly Active Polar Regions

The United States is an Arctic nation, and the Coast Guard is responsible for safety, security and environmental stewardship where our sovereign rights extend in the Arctic region, including the resource rich seabed along our Extended Continental Shelf. These are not new requirements. The Coast Guard has been operating in Polar Regions since the United States purchased Alaska from Russia in 1867. Then, as now, our mission included protecting our sovereign rights, enforcing treaties and U.S. laws and regulations, conducting search and rescue and environmental response operations, assisting in scientific exploration, and fostering navigation safety. Yet, the Polar Regions are evolving as changing weather patterns and receding ice continue to introduce risks and opportunities in the Arctic. As ice melts, sea lanes and access to natural resources open, increasing the national interest in safe and responsible use of this vital region. Interest in the Polar Regions and the natural riches they contain, is on the rise, and requires us to plan for a more robust U.S. maritime presence commensurate with development of the region. Icebreakers that can assure access throughout the Arctic are a key element of that planning.

United States Security Interests in the Polar Regions

Consistent with the National Strategy for the Arctic Region, our highest priority is to protect the American people, our sovereign territory and rights, natural resources, and interests of the United States. To this end, the United States will identify, develop, and maintain the capacity and capabilities necessary to promote safety, security, and stability in the region through a combination of independent action, bilateral initiatives, and multilateral cooperation. As many nations across the world aspire to expand their role in the Arctic, the Coast Guard is collaboratively working through appropriate fora to address the emerging challenges and opportunities in the Arctic region, while we remain vigilant to protect the security interests of the United States and our allies.

The Polar Regions present unique opportunities and challenges to United States security interests. Relatively few countries in the world can claim sovereign rights to any portion of the Arctic, and few have the resources to operate consistently and effectively in these harsh and remote areas. U.S. security in the Arctic encompasses a broad spectrum of activities, ranging from those supporting safe commercial and scientific operations to national defense. To respond to this challenge, the United States will enable our vessels and aircraft to operate, consistent with international law, through, under, and over the airspace and waters of the Arctic, to support lawful commerce, achieve a greater awareness of activity in the region, and intelligently evolve our Arctic operations and capabilities, including ice-capable platforms as needed.

Meeting these challenges requires the United States to develop and maintain capacity for year-round access to greater expanses within Polar Regions. In the Arctic, highly capable icebreakers will ensure the United States can meet our national interests, protect and manage our natural resources, enable U.S. forces to uphold freedom of the seas consistent with international law, and strengthen our international, state, local, and tribal relationships. In the Antarctic, they can also provide capability to resupply our scientific outposts while also supporting treaty obligations.

Icebreaker Requirements

The 2010 High Latitude Mission Analysis Report (HL MAR) identified the need for three heavy and three medium icebreakers under the assumption that in the future Coast Guard would be required to perform nine of its eleven statutory mission year-round in the Arctic and support all icebreaking needs for the National Science Foundation in Antarctica. The primary differences between heavy and medium icebreakers are endurance and power. The Coast Guard considers a heavy icebreaker to be one that can operate year-round in the Arctic, with the necessary systems and endurance to protect its crew in the event it had to "winter-over" in substantial ice conditions. In addition to exceptional power, a heavy icebreaker must have a fully mission capable cutter endurance of 80 days underway without replenishment, be able to deploy helicopter detachments, and be able to perform the full suite of Coast Guard missions. As Coast Guard vessels are considered U.S. Warships under International Law, a heavy icebreaker must be fully interoperable with interagency and international stakeholders, including the Department of Defense, to carry out National Defense Operations.

Whereas a heavy icebreaker has the power and endurance to operate year-round in the changing ice conditions of the Polar Regions, medium icebreakers can only operate seasonally in the Arctic. The Coast Guard has chartered an Integrated Product Team to define an Operating Concept and requirements for a Medium Icebreaker. While medium icebreakers like the HEALY provide critical capability identified in the HL MAR, the age and condition of our only operational heavy icebreaker, POLAR STAR, makes recapitalizing this heavy icebreaking capability a higher priority.

Icebreaker Status

The current Coast Guard icebreaker capacity is one heavy polar icebreaker, CGC POLAR STAR – commissioned in 1976, and one medium icebreaker, CGC HEALY – commissioned in 2000. An additional heavy polar icebreaker, CGC POLAR SEA, is in a caretaker status and has not been operationally viable for nearly 10 years. When assessing our current inventory, it is helpful to understand the history that led us here.

The acquisition of our heavy polar icebreakers over 40 years ago introduced a shift in our operating regime from several less capable icebreakers that worked in tandem with supply convoys, to fewer more capable icebreakers capable of operating independently. The WIND Class icebreakers, a product of the U.S. naval build-up for World War II, were smaller and less capable ships that operated in groups of two or three. The POLAR Class requirements initially supported four heavy POLAR icebreakers to replace the seven aged WIND Class vessels, but other priorities ultimately led to a decision to build two: POLAR SEA and POLAR STAR. The harsh polar operating environment, coupled with the arduous nature of actually breaking ice, age these vessels more quickly than our normal surface assets. When both were operational, we maintained a self-rescue capability and were able to balance maintenance periods to better mitigate wear and tear caused by the unforgiving operating environment. Today, substantial annual maintenance and upkeep is required in order to maintain the minimum operating capability our current inventory represents.

Acquisition
In September 2015, the President directed the Coast Guard to accelerate construction of the first new heavy icebreaker and to begin planning for additional assets. Consistent with this commitment, the President's FY 2017 Budget includes $150 million to accelerate the acquisition of a new heavy Polar Icebreaker. This investment reflects our interests as an Arctic Nation and affirms the Coast Guard's role in assuring access to this region. Since the President announced this initiative last September, the Coast Guard has made progress toward recapitalizing our heavy icebreaker fleet and have worked closely with our federal partners throughout this process. Key stakeholders participated in the identification of operational requirements, and the Coast Guard completed the heavy icebreaker Operational Requirements Document (ORD) earlier this year.

We have also completed initial industry outreach efforts that included a highly successful industry day with over 200 stakeholders, and over 50 one-on-one discussions with vendors, shipyard representatives and other industry professionals in conjunction with the release of a technical package laying out the high-level design and performance requirements. Industry has shown an eagerness to participate in this process, and we welcome their input. Developing new icebreaking capability at best possible speed remains among the Service's highest priorities.

The Coast Guard acquisition team is aggressively finalizing an acquisition strategy, and this year we plan to publish a draft specification for design. This will be followed by a statement of work and a draft Request for Proposal to provide additional opportunity for industry to review and submit comments before a final solicitation is released.

Sustainment
The Coast Guard also understands that we must maintain our existing heavy and medium icebreaking capability while proceeding with recapitalization. Maintenance of the POLAR STAR will be critical to sustaining U.S. heavy icebreaker capability until new heavy icebreakers are commissioned. To mitigate the risk of crippling failure, we have engaged in a yearly dry dock maintenance cycle to overhaul critical components and make repairs necessary to keep the POLAR STAR operational. While the maintenance cycle has ensured the POLAR STAR's availability for the annual McMurdo break-out, it increases the POLAR STAR's time away from homeport to roughly 300 days per year and this is not sustainable over the long term.

We are on track to complete the POLAR SEA materiel condition assessment and alternatives analysis to determine whether it is most prudent to decommission or reactivate this ship. These efforts will determine the scope of work and costs to reactivate POLAR SEA based on the vessel's current condition. The latter part of this effort will also consider whether an additional service life extension on POLAR STAR would be the most prudent option for maintaining heavy icebreaker capability while the Coast Guard proceeds with a new acquisition.

Acknowledging that our only medium icebreaker is approaching 20 years of age, we are also taking initial steps to prepare for a mid-life maintenance availability on HEALY as was indicated in the President's FY 2017 Budget which included $1.5 million for this purpose. We are also investigating the feasibility of segmented midlife maintenance projects to mitigate impacts to operations.

Building the 21st Century Coast Guard

History has proven that a responsive, capable, and agile Coast Guard is an indispensable instrument of national and international security. Funding 21st century Coast Guard icebreakers is an especially prudent investment. To ensure we are equipped to address the demands of the evolving Arctic operating environment, the Coast Guard, with the continued strong support of the Congress, is accelerating acquisition of a heavy icebreaker and beginning to plan for additional icebreakers. Modern platforms and a strong, resilient workforce will ensure the Coast Guard is prepared to meet 21st century challenges.

Conclusion

As we approach our 226th anniversary, with the continued support of the Administration and Congress, the Coast Guard's future is bright and we will continue to live up to our motto to be Semper Paratus – Always Ready. I look forward to continuing to work with the Administration and Congress to answer the President's call for new heavy polar icebreakers as soon as they can be built. We understand the significant investment recapitalizing this fleet represents, and appreciate and embrace the trust the Nation has placed in the Service. Thank you for the opportunity to testify before you today and for all you do for the men and women of the Coast Guard. I look forward to your feedback and answering your questions.

Question#:	1
Topic:	Alternative Planning Criteria Initiative in the Arctic
Hearing:	Coast Guard Mission Arctic Implementation Capabilities
Primary:	The Honorable Don Young
Committee:	TRANSPORTATION (HOUSE)

Question: How will the ongoing Alternative Planning Criteria Initiative (APC) ensure that the remote northern region of the Bering Sea and Arctic region encompassed by the Western Alaska Captain of the Port (COTP) Zone are protected from oil spills?

Response: The ongoing APC policy initiative will ensure consistent and comprehensive response preparedness is available in remote areas, whether challenged by the availability of resources and infrastructure, distance, or both. The APC policy initiative creates a framework for industry to address every aspect of the national planning criteria to ensure that all risks are adequately addressed with response resources or mitigated by other appropriate measures.

Question: Will the U.S. Coast Guard be conducting an economic study of what the economic impact of this initiative will be in this region?

Response: The Coast Guard will not conduct a study of the economic impact of the APC policy. The Coast Guard will consider, as part of its evaluation of APC proposals, industry's economic analysis of full compliance with the national planning criteria and how/why an APC is a more appropriate and cost effective option. This is detailed in the draft APC policy.

Question#:	1
Topic:	Cost-Sharing Arrangements
Hearing:	Coast Guard Mission Arctic Implementation Capabilities
Primary:	The Honorable Mark Sanford and The Honorable Janice Hahn
Committee:	TRANSPORTATION (HOUSE)

Question: With regard to cruise lines in the Arctic, and your sharing of resources and capacity w/o charge, wouldn't there be cost-sharing arrangements that could both benefit the taxpayer and take care of the safety needs the Coast Guard is responsible for?

Response: Ensuring the safety of the maritime public and protecting the environment are fundamental Coast Guard missions, and the Coast Guard does not generally seek payment or reimbursement for these services. Charging cruise lines in the Arctic for such activities would run counter to this fundamental premise, and could deter both commercial and recreational users from engaging the Coast Guard on matters of safety. The Coast Guard values a strong partnership with industry in managing risk in the maritime environment. The Coast Guard routinely cooperates with a variety of industries as they expand into new technologies and operations in an effort to mitigate associated risks.

Question#:	2
Topic:	Cost Estimate
Hearing:	Coast Guard Mission Arctic Implementation Capabilities
Primary:	The Honorable Mark Sanford and The Honorable Janice Hahn
Committee:	TRANSPORTATION (HOUSE)

Question: Provide estimate of Coast Guard resources required to prepare for and escort of the Cruise Ship CRYSTAL SERENITY's voyage through North West Passage.

Response: The Coast Guard did not receive a request to provide, nor did it provide, any escort to *Crystal Serenity* or any other vessels operating in U.S. Arctic waters during the 2016 summer season.

While *Crystal Serenity* was in U.S. waters, several Coast Guard assets, including cutters and aircraft, were in the vicinity participating in our annually scheduled Operation Arctic Shield, as well as a planned Arctic Council Mass Rescue Operation (MRO) drill conducted by the Coast Guard, DOD, the State of Alaska, international partners, and local communities.

NOT FOR PUBLICATION UNTIL RELEASED BY
THE HOUSE TRANSPORTATION &
INFRASTRUCTURE COMMITTEE
COAST GUARD AND MARITIME
TRANSPORTATION SUBCOMMITTEE

STATEMENT OF

MS. ALLISON STILLER
PRINCIPAL CIVILIAN DEPUTY TO THE
ASSISTANT SECRETARY OF THE NAVY FOR
RESEARCH, DEVELOPMENT AND ACQUISITION

BEFORE THE

COAST GUARD AND MARITIME TRANSPORTATION SUBCOMMITTEE

OF THE

HOUSE TRANSPORTATION AND INFRASTRUCTURE COMMITTEE

ON

COAST GUARD ARCTIC IMPLEMENTATION CAPABILITIES

July 12, 2016

NOT FOR PUBLICATION UNTIL RELEASED BY
THE HOUSE TRANSPORTATION
& INFRASTRUCTURE COMMITTEE
COAST GUARD AND MARITIME
TRANSPORTATION SUBCOMMITTEE

Chairman Hunter, Ranking Member Garamendi, and distinguished members of the Subcommittee, thank you for the opportunity to discuss the Navy's ongoing and continued involvement with the Coast Guard and ship design and construction collaboration. The Navy fully supports the President's National Strategy for the Arctic Region and its corresponding implementation Plan. The Navy also looks forward to working with Congress and the Coast Guard to explore ways to answer the President's call to accelerate the recapitalization of heavy icebreaking ships to meet our national interests in the changing Arctic region.

U.S. Navy Arctic Roadmap 2014-2030 aligns with the National and Department of Defense Arctic Strategies and includes a plan that directs the development of Arctic capabilities and capacity in step with changing environmental conditions. The Navy's four strategic objectives in the Arctic include ensuring U.S. Arctic sovereignty, providing ready naval forces, preserving freedom of the seas, and promoting partnerships. The Navy will continue our strong, cooperative partnership with the Coast Guard, in addition to the interagency and international Arctic Region stakeholders, to address emerging opportunities and challenges presented by the seasonal opening of the Arctic Ocean waters. The Navy will continue to exploit all opportunities that will provide our sailors with superior maritime knowledge of the Arctic.

The Navy will work closely with the Coast Guard as they procure the first heavy icebreaker in 2020; consistent with the Coast Guard's recently established heavy icebreaker operational requirements. Coupled with Congressional support, both the Navy and the Coast Guard are working to develop a program plan to efficiently and effectively move the icebreaker program forward. As you know, the Navy has a long history of designing and acquiring ships and we have offered our full range of experience and expertise to the Coast Guard and the icebreaker program. We are aware of the Coast Guard's acquisition team's progress in executing an Analysis of Alternatives which, along with industry involvement, will inform the icebreaker acquisition strategy.

The Navy is committed to the success of this icebreaker program and we offer the support of our acquisition community during the Coast Guard's design, development, construction, test, trials and delivery processes. We stand ready to provide shipbuilding expertise in acquisition career fields including program management, engineering, cost estimating, test, and manufacturing. We will provide access to facilities such as the model basin tow tank at Naval Surface Warfare Center at Carderock, Maryland to help retire risk to the program. The Navy and Coast Guard both stand to see mutual benefit using best practices in shipbuilding to strengthen the shipbuilding industrial base.

The Navy stands alongside the Coast Guard in this endeavor to see the icebreaker program become a success.

Again, thank you Chairman Hunter, Ranking Member Garamendi and other members of this Subcommittee for the opportunity to appear before you today.

United States Government Accountability Office

GAO

Testimony before the Subcommittee on Coast Guard and Maritime Transportation, Committee on Transportation and Infrastructure, House of Representatives

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COAST GUARD

Agency Could Better Assess Its Impact on Arctic Capability Gaps and Is Exploring Icebreaker Acquisition Options

Statement of Jennifer Grover, Director, Homeland Security and Justice

GAO Highlights

Highlights of GAO-16-738T, a testimony before the Subcommittee on Coast Guard and Maritime Transportation, Committee on Transportation and Infrastructure, House of Representatives

Why GAO Did This Study

The retreat of polar sea ice in the Arctic, as reported by the U.S. National Snow and Ice Data Center, combined with an expected increase in human activity there, has heightened U.S. and other nations' interests in the Arctic region in recent years. Growth in Arctic activity is expected to increase demand for services such as search and rescue and maritime navigation support, which can be a challenge to provide given the harsh and unpredictable weather and vast distances that responding agencies must travel to reach the Arctic. The Coast Guard plays a significant role in U.S. Arctic policy and issued its Arctic strategy in May 2013.

This statement addresses the extent to which the Coast Guard has (1) assessed its Arctic capabilities and taken actions to mitigate any identified gaps, and (2) reported being able to carry out polar icebreaking operations. This testimony is based on a June 2016 GAO report. GAO reviewed relevant laws and policies and Coast Guard documents that detail Arctic plans, among other things. Detailed information on GAO's scope and methodology can be found in the June 2016 report.

View GAO-16-738T. For more information, contact Jennifer A. Grover at (202) 512-7141 or groverj@gao.gov.

July 12, 2016

COAST GUARD

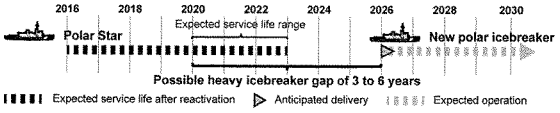
Agency Could Better Assess Its Impact on Arctic Capability Gaps and Is Exploring Icebreaker Acquisition Options

What GAO Found

GAO reported in June 2016 that the U.S. Coast Guard, within the Department of Homeland Security (DHS), had assessed its Arctic capabilities and worked with its Arctic partners—such as other federal agencies— to mitigate Arctic capability gaps, including communications and training. Although Coast Guard officials stated that the agency's actions, such as testing communication equipment in the Arctic and conducting Arctic oil spill response exercises, have helped to mitigate Arctic capability gaps, the Coast Guard has not systematically assessed the impact of its actions on these gaps. GAO recommended in June 2016 that the Coast Guard develop measures, as appropriate, and design and implement a process, for systematically assessing the extent to which its actions have helped mitigate Arctic capability gaps. DHS concurred with GAO's recommendations, and the Coast Guard reported that it planned to develop specific measures for some of its Arctic activities and systematically assess how its actions have helped to mitigate the capability gaps for which the Coast Guard is the lead agency. While officials stated they are unable to unilaterally close capability gaps for which the Coast Guard is not the lead agency, assessing the impact of Coast Guard actions for such capability gaps would better enable the Coast Guard to understand the effectiveness of its actions and the status of all capability gaps, as well as plan its Arctic operations.

GAO's June 2016 report also found that the Coast Guard has been unable to fulfill its polar icebreaking responsibilities with its aging icebreaker fleet, which currently includes two active icebreakers. In 2011 and 2012, the Coast Guard was unable to maintain year-round access to the Arctic and did not meet 4 of 11 requests for polar icebreaking services. With its one active heavy icebreaker—which has greater icebreaking capability—nearing the end of its service life, the Coast Guard initiated a program in 2013 to acquire a new one and is working to determine the optimal acquisition strategy. However, the Coast Guard's efforts to acquire an icebreaker, whether by lease or purchase, will be limited by legal and operational requirements. In addition, current projections show that the Coast Guard is likely to have a 3- to 6-year gap in its heavy icebreaking capability before a new icebreaker becomes operational, as shown below. The Coast Guard is developing a strategy to determine how to address this expected gap.

Coast Guard's Heavy Icebreaker Availability and Expected Capability Gap, Present until 2030



Source: GAO analysis of U.S. Coast Guard documents. | GAO-16-738T

Chairman Hunter, Ranking Member Garamendi, and Members of the Subcommittee:

I am pleased to be here today to discuss our June 2016 report on the Coast Guard's Arctic capabilities—including polar icebreaking—that is being publically released at today's hearing.[1] The retreat of polar sea ice in the Arctic, as reported by the U.S. National Snow and Ice Data Center, combined with an expected increase in human activity there, has heightened U.S. and other nations' interests in the Arctic region in recent years. Diminishing sea ice has made some Arctic waters navigable for longer periods and, as a result, may contribute to new economic opportunities in commercial shipping, tourism, and commercial fishing, among other activities. Growth in Arctic activity is expected to increase demand for services such as search and rescue and maritime navigation support, which can be a challenge to provide given the harsh and unpredictable weather and vast distances that responding agencies must travel to reach the Arctic. U.S. interest in the Arctic was further heightened in anticipation of the United States taking over the chairmanship of the Arctic Council—a voluntary intergovernmental forum—in 2015.[2]

My statement today summarizes selected findings from our June 2016 report, and addresses the extent to which the Coast Guard has (1) assessed its Arctic capabilities and taken actions to mitigate any identified gaps, and (2) reported being able to carry out polar icebreaking operations.[3] To conduct this work, we reviewed relevant laws and

[1]GAO, *Coast Guard: Arctic Strategy is Underway but Agency Could Better Assess How Its Actions Mitigate Known Arctic Capability Gaps*, GAO-16-453 (Washington D.C.: June 15, 2016).

[2]Established by the Ottawa Declaration in 1996, the Arctic Council is the intergovernmental forum for addressing issues related to the Arctic Region and operates on a basis of consensus. The participants of the Arctic Council include the eight Arctic States—Canada, the Kingdom of Denmark (Denmark), Finland, Iceland, Norway, the Russian Federation (Russia), Sweden, and the United States—plus six groups representing the indigenous people of the Arctic. The Council focuses its work on matters related to sustainable development, the environment, and scientific cooperation in the Arctic; its mandate explicitly excludes military security.

[3]Our June 2016 report also reviewed the progress that the Coast Guard reported toward implementing its Arctic strategy and the factors that affect Coast Guard planning for Arctic operations, see GAO-16-453.

policies, and Coast Guard documents that detail its Arctic plans, and interviewed officials from the Department of Homeland Security (DHS) and the Coast Guard, as well other federal agencies involved in Arctic issues. We also conducted a site visit to Alaska and interviewed officials from the Coast Guard, state and local government entities, native village corporations, and private or nonprofit organizations. These observations are not generalizable, but provided insights on Coast Guard activities. More detailed information on our scope and methodology can be found in our June 2016 report.[4] Our work was performed in accordance with generally accepted government auditing standards.

With this heightened Arctic focus, various strategies and policies have been released by the White House and other federal entities to supplement long-standing U.S. Arctic policy. For example, the White House issued the *National Strategy for the Arctic Region* in 2013 and its corresponding implementation plan in 2014, and the White House National Ocean Council issued the *National Ocean Policy Implementation Plan* in April 2013 which specifically identifies Arctic issues.[5] To coordinate the actions of federal entities involved in the Arctic, the White House established the Arctic Executive Steering Committee in January 2015 and tasked it with shaping priorities, providing strategic direction, overseeing implementation of the *National Strategy for the Arctic Region*, and ensuring coordination of federal activities in the Arctic, among other things.[6]

The U.S. Coast Guard, within DHS, plays a significant role in U.S. Arctic policy and issued its corresponding Arctic strategy, which seeks to

[4]GAO-16-453.

[5]White House, *National Strategy for the Arctic Region* (Washington, D.C.: May 10, 2013), and *Implementation Plan for the National Strategy for the Arctic Region* (Washington, D.C.: Jan. 30, 2014). The implementation plan was superseded in March 2016 by the *Implementation Framework for the National Strategy for the Arctic Region*. National Ocean Council, *National Ocean Policy Implementation Plan* (Washington, D.C.: April 2013). The *National Ocean Policy Implementation Plan* was created to translate the *National Policy for the Stewardship of the Ocean, Our Coasts, and the Great Lakes* into on-the-ground actions. See Appendix IV and V of our June 2016 report for more on these national strategies and plans, GAO-16-453.

[6]The Arctic Executive Steering Committee was established under Executive Order 13689, *Enhancing Coordination of National Efforts in the Arctic*. Exec. Order No. 13,689, 80 Fed. Reg. 4191 (Jan. 26, 2015).

support national policy, in May 2013.[7] According to the Coast Guard, the development of its strategy was guided by the *National Strategy for the Arctic Region* and the *National Ocean Policy Implementation Plan*, as well as key presidential directives, executive orders, and other national strategies. In December 2015, the Coast Guard issued the implementation plan intended to operationalize its Arctic strategy within existing resources.[8] We reported in June 2016 that the Coast Guard was developing a web-based tool to track the status of its Arctic implementation plan, as well as the status of its Arctic-related responsibilities under other national strategies, presidential directives, and service directives. Coast Guard officials stated that they anticipate finalizing the web-based tool for management approval by October 2016.

Since 2008, the Coast Guard has conducted an annual operation in the Arctic (now known as Operation Arctic Shield).[9] Coast Guard officials stated that Arctic Shield is a seasonal surge operation designed to help the Coast Guard learn how to operate in this increasingly active region. Arctic Shield is intended to provide the Coast Guard with the opportunity to (a) perform Coast Guard missions and activities, (b) advance maritime domain awareness, (c) broaden partnerships in support of Coast Guard Arctic operations, and (d) enhance and improve preparedness, prevention, and response capabilities in the Arctic. In addition to the aircraft, cutters, and personnel that are deployed for Arctic Shield, the Coast Guard has also carried out the nation's polar icebreaking needs with its fleet of three polar icebreakers—the *Polar Star*, *Polar Sea*, and *Healy*—of which just the *Polar Star* and *Healy* are currently active, as shown in figure 1. The *Polar Star* and the *Polar Sea* are heavy polar

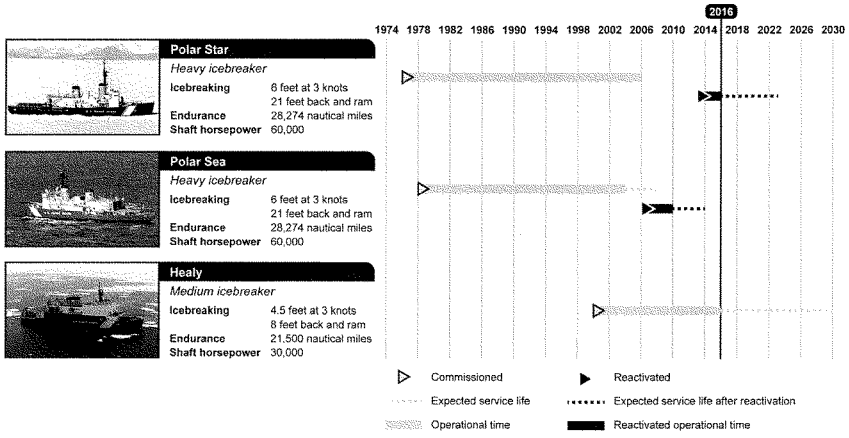
[7]U.S. Coast Guard, *United States Coast Guard Arctic Strategy* (Washington, D.C.: May 2013). Other federal agencies and interagency groups have Arctic responsibilities and these entities are detailed in our June 2016 report, see GAO-16-453.

[8]U.S. Coast Guard, *United States Coast Guard Arctic Strategy Implementation Plan* (Washington, D.C.: December 2015). For more on the Coast Guard's implementation of its Arctic strategy, see our June 2016 report, GAO-16-453.

[9]For more on how the Coast Guard plans for Arctic Shield, see our June 2016 report, GAO-16-453.

icebreakers and the world's most powerful non-nuclear icebreakers.[10] The *Healy* is a medium icebreaker that primarily supports Arctic research. However, the *Healy* cannot operate independently in Antarctic ice conditions or ensure timely access to some Arctic areas in the winter.

Figure 1: U.S. Coast Guard's Polar Icebreaker Fleet



Source: GAO analysis of Coast Guard documents; U.S. Coast Guard (photographs). | GAO-16-738T

Note: The *Polar Sea* went under extensive repair from 2004 to 2006 and was not operational during this time. The repair resulted in an anticipated extension of the *Polar Sea*'s service life until 2014. However, it suffered major engine casualties in June 2010, and has not been active since.

[10]The Coast Guard defines a heavy icebreaker as a vessel (generally with at least 45,000 shaft horsepower) that can operate independently in polar environments with the presence of seasonal or multi-year ice. We used this definition for this report. While the Coast Guard's buoy tenders have limited ice breaking capability, only polar icebreakers are equipped to operate independently in existing and expected polar environments.

We reported in June 2016 that various requirements drive the Coast Guard's icebreaking mission responsibilities which are based in statute, presidential directive, strategies, and interagency agreements.[11] For example, the goals and activities set forth in the *National Strategy for the Arctic Region* and the 2009 presidential directive on the Arctic region drive the Coast Guard's need to maintain the ability to project a sovereign presence in the Arctic—a standard which requires the use of a polar icebreaker at certain times when seasonal ice covers large portions of the Arctic region.[12] The Coast Guard's icebreaking responsibilities are also derived from interagency agreements that commit it to providing icebreaking services to other departments and agencies in support of various strategic and scientific missions—including national defense.[13] For example, under a 2010 Memorandum of Agreement between the Coast Guard and the National Science Foundation, the Coast Guard agreed to provide polar icebreaker support to conduct the resupply of McMurdo Station to support the U.S. Antarctic program and to conduct

[11]Under federal law, the Coast Guard has been responsible for carrying out the nation's polar icebreaking needs since 1965—when it assumed primary responsibility for the nation's polar icebreaking fleet. 14 U.S.C. § 2 establishes that one of the Coast Guard's required primary functions is to maintain icebreaking facilities for use on the high seas and on waters subject to U.S. jurisdiction, as well as, pursuant to international agreements, to maintain icebreaking facilities on waters other than the high seas and on waters not subject to U.S. jurisdiction—specifically, the Antarctic region.

[12]White House, *National Strategy for the Arctic Region* (Washington, D.C.: May 10, 2013); White House, National Security Presidential Directive/NSPD-66 and Homeland Security Presidential Directive/HSPD-25, *Arctic Region Policy* (Jan. 9, 2009). Although record lows for recent summer and early autumn sea ice extent have made seasonal maritime navigation more feasible in the Arctic, the Coast Guard reported that polar icebreakers can still be necessary during these seasons to conduct research or to assist other vessels. Winter sea travel is also still severely limited due to extensive ice coverage across the Arctic region, necessitating heavy icebreaker assistance.

[13]According to the Department of Defense's 2013 Arctic Strategy, "the United States needs assured access to support U.S. national interests in the Arctic. Although this imperative could be met by regular U.S. Government ships in open water up to the marginal ice zone, only ice-capable ships provide assured sovereign presence throughout the region and throughout the year. Assured access in areas of pack ice could also be met by other means, including submarines and aircraft."

research in the Antarctic.[14] Appendix I provides a selection of the laws and policies that are cited as sources for the Coast Guard's need to maintain polar icebreaking capability.

The Coast Guard Has Assessed Its Arctic Capabilities and Taken Actions to Mitigate Gaps but Has Not Systematically Assessed Its Progress

In our June 2016 report, we found that although the Coast Guard had assessed its Arctic capabilities and worked with its Arctic partners—such as other federal agencies— to carry out actions to help mitigate Arctic capability gaps—it had not systematically assessed how its actions have helped to mitigate these gaps. Specifically, we reported that the Coast Guard had assessed its capability to conduct its Arctic missions and had identified various capability gaps, primarily through two key studies.[15] The capability gaps identified in these reports—which Coast Guard officials confirmed remain relevant and highlighted in their Arctic strategy—include (1) communications, (2) Arctic maritime domain awareness,[16] (3) infrastructure, (4) training and exercise opportunities, and (5) icebreaking. These gaps are similar to the ones we identified in 2010.[17]

According to Coast Guard officials, through the agency's role in implementing the various Arctic strategies and implementation plans, the

[14]The United States Antarctic Program, which is managed by the National Science Foundation, requires an annual delivery of fuel and cargo to McMurdo Station. Because the tanker and cargo ships cannot access McMurdo Station independently, the National Science Foundation has typically relied on the Coast Guard's icebreaker fleet to open a channel for the tanker and cargo ships. The McMurdo Station operation occurs during the austral summer (i.e., in January or February when the ice is thinnest), which coincides with the Arctic winter.

[15]U.S. Coast Guard, *High Latitude Study Mission Analysis Report* (Washington, D.C., November 2011). This report was created to inform key decision makers evaluating Coast Guard high-latitude operational requirements, as well as acquisition and sustainment decisions for forward operating locations, aircraft, communications systems, and ice-capable vessels. Another study, issued by the Department of Defense–DHS Arctic Capabilities Assessment Working Group in March 2012, consolidated the needed capabilities identified in various federal agency studies on the Arctic, and is intended to guide both departments' investment priorities.

[16]Maritime domain awareness is the effective understanding of anything associated with the global maritime domain that could affect the United States' security, safety, economy, or environment.

[17]GAO, *Coast Guard: Efforts to Identify Arctic Requirements Are Ongoing, but More Communication about Agency Planning Efforts Would Be Beneficial*, GAO-10-870 (Washington, D.C.: Sept. 15, 2010).

Coast Guard has taken actions, along with its Arctic partners, that have helped to mitigate capability gaps. For example, the Coast Guard is the lead agency for implementing the strategies' tasks related to enhancing Arctic maritime domain awareness. In addition, Coast Guard officials reported that they utilize the annual Arctic Shield operations as the primary operational method to better understand the agency's Arctic capabilities and associated gaps and to take actions to help mitigate them. For example, during Arctic Shield operations, the Coast Guard tested communications equipment belonging to the Department of Defense—extending communications capabilities further north than previously possible—and conducted Arctic oil spill response exercises.

However, we found in our June 2016 report that the Coast Guard had not systematically tracked the extent to which its actions agency-wide have helped mitigate Arctic capability gaps. Coast Guard officials attributed this, in part, to not being able to unilaterally close the gaps. While fully mitigating these gaps requires joint efforts among Arctic partners, the Coast Guard has taken actions in the Arctic that are specific to its missions and has responsibility for assessing the extent to which these actions have helped to close capability gaps. *Standards for Internal Control in the Federal Government* provide that ongoing monitoring should occur in the course of normal operations and should help ensure that the findings of reviews, such as the capability gaps identified in the previously mentioned reports, are resolved.[18] As a result, we recommended in our June 2016 report that the Coast Guard develop measures, as appropriate, and design and implement a process for systematically assessing the extent to which its actions have helped mitigate Arctic capability gaps.

DHS concurred with our recommendations, and in response, the Coast Guard reported that it planned to develop specific measures for some of its Arctic activities and systematically assess how its actions have helped to mitigate the capability gaps for which the Coast Guard is the lead agency, such as icebreaking capacity. We believe that these actions, if implemented, will help the Coast Guard better understand the status of these capability gaps and better position it to effectively plan its Arctic

[18]GAO, *Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington, D.C.: November 1999).

operations. However, we continue to believe that it is important for the Coast Guard to also systematically assess how its actions affect Arctic capability gaps for which it is not the lead, such as communications. Although the Coast Guard may not be the lead for these gaps, assessing the impact of Coast Guard actions for such capability gaps would better enable the Coast Guard to understand the effectiveness of its actions and the status of all capability gaps. Also, as these gaps may affect its Arctic missions, this knowledge may be helpful to the Coast Guard in planning its operations.

Coast Guard Has Been Unable to Fulfill All Polar Icebreaking Operations and Is Taking Steps to Begin Icebreaker Acquisition

Our June 2016 report found the Coast Guard has been unable to fulfill some of its polar icebreaking responsibilities with its aging polar icebreaking fleet, and had efforts underway to acquire a heavy icebreaker—which has greater icebreaking capability than a medium icebreaker. Specifically, in 2011 and 2012 when its heavy icebreakers were not active, the Coast Guard was unable to maintain assured, year-round access to the Arctic and did not meet 4 of 11 requests for polar icebreaking services. The Coast Guard reported that increased heavy icebreaking capacity is needed to fully meet requirements in the Arctic and Antarctic regions.[19] A 2010 Coast Guard-commissioned study found that at least six icebreakers—three heavy and three medium—would be required to carry out the Coast Guard's statutory missions, if the Coast Guard were to fully accomplish all of its polar icebreaking responsibilities.[20] Recognizing the fiscal challenges posed by such a request, Coast Guard officials have stated that obtaining a minimum of two heavy icebreakers is needed to at least maintain the fleet's self-rescue capability in the event one vessel became beset in ice—a capability the Coast Guard does not currently have.

We also found that the Coast Guard initiated a program in 2013 to acquire a new heavy icebreaker to maintain polar icebreaking capability after the *Polar Star*'s projected service life ends between 2020 and 2023.

[19]The Coast Guard reported that a medium icebreaker, like the *Healy*, can complete many of the Coast Guard's Arctic missions, but cannot operate independently in the presence of thick ice; only heavy polar icebreakers can provide assured, year-round access to both polar regions.

[20]ABS Consulting, *United States Coast Guard High Latitude Region Mission Analysis Capstone Summary*, prepared for the United States Coast Guard, (July 2010).

Currently, the Coast Guard is working to determine the optimal acquisition strategy. To move forward with the acquisition process, the Coast Guard would need to receive funding for an icebreaker—which, according to a 2013 preliminary estimate, would be about $1.09 billion—and ensure that a U.S.-based commercial shipyard would be able to build the vessel.[21] For many years, the Coast Guard's annual acquisition budget has been allocated primarily to other projects.[22] The President's fiscal year 2017 budget request outlined plans to accelerate the acquisition process for a heavy icebreaker, so that production activities could commence by 2020.[23]

Various factors limit the options available to the Coast Guard to maintain, or increase, its icebreaker capacity. The Coast Guard has reported that the long-term lease of a polar icebreaker is unlikely to result in cost savings when compared with a purchase. Specifically, we reported in June 2016 that two key factors limiting the Coast Guard's options for acquiring icebreaking capacity are the lack of an available icebreaker that meets agency and legal requirements, and the total cost that would be associated with a long-term lease.

- **Availability.** The Coast Guard reported that no existing heavy icebreakers were available to lease or purchase that met both its legal and operational requirements. Specifically, to meet legal requirements, the Coast Guard would need to either purchase or demise charter the icebreaker,[24] as legal requirements associated with several Coast Guard missions prohibit a short-term lease.

[21]According to 14 U.S.C. § 665, no Coast Guard vessel may be constructed in a foreign shipyard, unless the President authorizes an exception when it is in the national security interest of the United States to do so. Coast Guard officials stated that they believe the U.S. private sector has the potential to place competitive bids based on inquiries made during initial acquisition phases.

[22]In fiscal year 2016, the Coast Guard's acquisition budget was $1.945 billion, approximately 60 percent higher than the prior year.

[23]In May 2016, the Senate Committee on Appropriations reported a Department of Defense appropriations bill for fiscal year 2017 that would include $1 billion for the first ship of the Polar Icebreaker Recapitalization Project. S. 3000 (114th Cong.).

[24]Under a demise charter, also known as a bareboat charter, the Coast Guard would take responsibility for the crewing, operation, and maintenance of the vessel, as described in 46 C.F.R. § 169.107.

Specifically, under federal law, to be capable of conducting all of its statutory missions, the Coast Guard must use a public vessel, which federal law defines as one that the United States owns or demise charters.[25] For example, federal law states that the Coast Guard's Ports, Waterways, and Coastal Security Mission may be carried out with public vessels or private vessels tendered gratuitously for that purpose.[26] Further, federal law provides that no Coast Guard vessel may be constructed in a foreign shipyard.[27] According to the Coast Guard, besides the *Polar Star* and the *Polar Sea*, the only existing icebreakers powerful enough to meet the Coast Guard's operational requirements were built in and are owned by Russia and would not comply with this legal requirement.

- **Budgeting and Total Cost.** Budget requirements also affect the Coast Guard's ability to acquire an icebreaker. For example, Office of Management and Budget (OMB) guidelines require federal agencies to acquire assets in the manner least costly overall to the government. Specifically, for a large acquisition like a heavy icebreaker, OMB Circular A-94 requires the Coast Guard to conduct a lease-purchase analysis based on total lifecycle costs of the asset.[28] To proceed with a lease, the Coast Guard would need to show that leasing is preferable to direct government purchase and ownership. Budget scorekeepers—specifically, OMB, the Congressional Budget Office, and the House and Senate Budget Committees—score purchases and capital leases at the outset of the acquisition.[29] A 2011

[25]46 U.S. C. § 2101(24).

[26]33 U.S.C. § 1234. Similarly, for the Coast Guard to employ its law enforcement authorities in the conduct of certain missions, the icebreaker would need to operate as a warship, and warships are necessarily sovereign immune, public vessels, according to Coast Guard officials. See 14 U.S.C. § 89; 46 U.S.C. § 2101(47). Under the Law of the Sea Convention, to exercise U.S. immunity on the high seas, a Coast Guard vessel must be a warship or government vessel on noncommercial service. See Law of the Sea Convention, Articles 95, 96. While the United States is not a party to the Convention, according to the *National Strategy for the Arctic Region*, the United States supports and observes principles of established customary international law reflected in the Convention.

[27]14 U.S.C. § 665.

[28]Office of Management and Budget Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs* (1992).

[29]Based on scoring rules, the long-term lease of a polar icebreaker would not qualify as an operating lease, which is intended for short-term needs and would allow the costs to be recognized over time.

preliminary cost analysis prepared for the Coast Guard indicated that the lease option would be more costly to the federal government over an icebreaker's expected 30-year service life. According to this analysis, the prospective ship owner's profit rate would increase the overall expense as this profit rate is priced into the lease, such that government ownership would be less costly in the long run.[30] Moreover, because a demise charter requires the lessee to operate and maintain the vessel, the Coast Guard would not be able to outsource crewing or maintenance activities to reduce its operating costs. Previous GAO work on the question of leasing versus buying an icebreaker identified important assumptions in comparing the costs to the federal government and suggested that outright purchase could be a less costly alternative than a long-term vessel lease.[31] Assuming that the cost of building and operating the vessel was the same under both the buy and the lease scenarios, the cost advantage to government purchase over leasing in our previous work was based on two factors. First, the costs of private sector financing under a lease arrangement—which were higher than the government's borrowing costs—could be expected to be passed on to the federal government in lease payments, thereby increasing the vessel's financing costs over what they would be under outright government purchase. Second, under a lease arrangement, an additional profit would accrue to the lessor for services related to its retained ownership of the vessel.

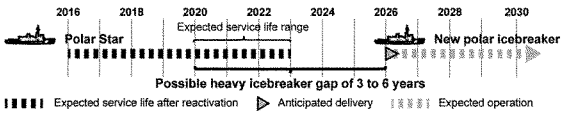
Anticipating a likely gap of 3 to 6 years in heavy icebreaker capability between the expected end of the *Polar Star*'s service life between 2020 and 2023 and the deployment of a new icebreaker in 2026, we reported in June 2016 that the Coast Guard is developing a bridging strategy, as

[30]According to a subsequent 2012 report prepared for the Coast Guard, legal and operational requirements render additional cost-benefit analysis of leasing unnecessary. Nevertheless, Coast Guard officials stated that they will consider leasing as a possible acquisition strategy in a forthcoming report, as directed by language in committee reports accompanying the Coast Guard's fiscal year 2014 appropriations. See S. Rep. No. 113-77, at 88-89 (2013). Coast Guard officials stated that they are evaluating this effort and will determine an estimated completion date for this report in the future.

[31]GAO, *National Science Foundation: Need for Additional Icebreaking Research Vessel Not Demonstrated*, GAO/RCED-95-77 (Washington, D.C.: May 12, 1995).

required by law, to determine how to address this expected gap (see fig. 2).[32]

Figure 2: Coast Guard's Heavy Icebreaker Availability and Expected Capability Gap, Present until 2030



Source: GAO analysis of U.S. Coast Guard documents. | GAO-16-738T

Note: This graphic does not incorporate additional acquisition or other proposed activities, such as reactivating the *Polar Sea*.

We reported in June 2016 that the Coast Guard has not determined the cost-effectiveness of reactivating the *Polar Sea*, and that a Bridging Strategy Alternatives Analysis will assess and make recommendations on whether to reactivate the *Polar Sea* and whether to further extend the service life of the *Polar Star*. Coast Guard officials said that they have not established a completion date for this report, but do not anticipate a final decision on the *Polar Sea* before fiscal year 2017, after which they will evaluate the cost-effectiveness of extending the *Polar Star*'s life, if necessary.

In conclusion, the Coast Guard has made progress in assessing its capabilities in the Arctic and taking steps to address identified capability gaps, but the Coast Guard could do more to systematically determine the progress it has made in helping to mitigate these various gaps. Further, several factors exist that affect the Coast Guard's options for acquiring a new icebreaker, including both legal and budgetary considerations that suggest a purchase of an icebreaker may be preferable to a long-term lease. Regardless of the acquisition approach, there is a strong likelihood of a 3 to 6 year gap in heavy icebreaking service, which underscores the need for the Coast Guard to move forward with its bridging strategy.

[32]Coast Guard and Maritime Transportation Act of 2012, Pub. L. No. 112-213, § 222, 126 Stat. 1540, 1560-1561, as amended by Howard Coble Coast Guard and Maritime Transportation Act of 2014, Pub. L. No. 113-281, § 505, 128 Stat. 3022, 3059-3060.

Chairman Hunter, Ranking Member Garamendi, and Members of the Subcommittee, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

Contacts and Staff Acknowledgments

If you or your staff have any questions about this testimony, please contact Jennifer Grover at (202) 512-7141 or groverj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals making key contributions to this testimony include Dawn Hoff (Assistant Director), Tracey Cross (Analyst-in-Charge), Chuck Bausell, Linda Collins, John Crawford, Michele Fejfar, Laurier Fish, Eric Hauswirth, Carol Henn, Susan Hsu, Tracey King, Jan Montgomery, Jillian Schofield, Katherine Trimble, and Eric Warren.

Appendix I: Selected Polar Icebreaking Authorities and Mandates

Federal laws	Description
14 U.S.C. § 2	Requires the Coast Guard to, in part, establish, develop, maintain, and operate icebreaking facilities on, under, and over the high seas and waters subject to the jurisdiction of the United States; and, pursuant to international agreements, requires the Coast Guard to develop, establish, maintain, and operate icebreaking facilities on, under, and over waters other than the high seas and waters subject to the jurisdiction of the United States.
14 U.S.C. § 87	Requires the President to facilitate planning for the design, procurement, maintenance, deployment, and operation of icebreakers as needed to support the statutory missions of the Coast Guard in the polar regions by allocating all funds to support icebreaking operations in such regions, except for recurring incremental costs associated with specific projects, to the Coast Guard.
14 U.S.C. § 93	Authorizes the Coast Guard to maintain icebreaking facilities.
14 U.S.C. § 94	Requires the Coast Guard to conduct such oceanographic research, use such equipment or instruments, and collect and analyze such oceanographic data, in cooperation with other agencies of the government, or not, as may be in the national interest.
14 U.S.C. § 141	Authorizes the Coast Guard to provide and accept personnel and facilities, from other federal and state agencies, to perform any activity for which such personnel and facilities are especially qualified and as may be helpful in the performance of its duties, respectively.
16 U.S.C. § 2431	Congress finds that the United States has important security, economic, and environmental interests in developing and maintaining a fleet of icebreaking vessels capable of operating effectively in the heavy ice regions of Antarctica.
16 U.S.C. § 2441	The Department of Homeland Security is required to facilitate planning for the design, procurement, maintenance, deployment, and operation of icebreakers needed to provide a platform for Antarctic research.
15 U.S.C. §4101	Congress finds that the United States has important security, economic, and environmental interests in developing and maintaining a fleet of icebreaking vessels capable of operating effectively in the heavy ice regions of the Arctic.
Strategic policies	
Implementation Framework for the National Strategy for the Arctic Region (2016)	The Coast Guard is the lead agency for ensuring the United States maintains icebreaking capability with sufficient capacity to project an assured Arctic maritime access, supports U.S. interests in the polar regions, and facilitates research that advances the fundamental understanding of the Arctic.
National Security Presidential Directive 66/Homeland Security Presidential Directive 25 (NSPD-66/ HSPD-25): Artic Region Policy (2009)	The Department of Homeland Security and other departments shall "[p]reserve the global mobility of United States military and civilian vessels and aircraft throughout the Arctic region" and "project a sovereign United States maritime presence in the Arctic in support of essential United States interests."
Presidential Memorandum 6646: United States Antarctic Policy and Programs (1982)	The Departments of Defense and Transportation (now Department of Homeland Security) shall provide logistical support as requested by the National Science Foundation to support the United States Antarctic Program.
Interagency agreements	
Memorandum of Agreement between Department of the Navy and Department of the Treasury on the Operation of Icebreakers (1965)	Navy agreed to transfer all icebreakers to the Coast Guard, and the Coast Guard agreed, among other things, to maintain and operate the U.S. icebreaker fleet, to prepare for contingency or wartime operations in polar regions, to assign icebreakers to the Navy's operational control for seasonal polar deployments, and to support scientific programs to the extent possible.

Memorandum of Agreement between Coast Guard and National Science Foundation (2010)	The Coast Guard agreed to provide polar icebreaker support to conduct the resupply of McMurdo Station to support the U.S. Antarctic program and to conduct research in the Antarctic.
Memorandum of Agreement between the Department of Defense and Department of Homeland Security on the Use of U.S. Coast Guard Capabilities and Resources in Support of the National Military Strategy (2008/2010)	In ice-covered and ice-diminished waters, Coast Guard icebreakers are the only means of providing assured surface access in support of the Department of Defense missions.

Source: GAO analysis of relevant laws, policies, and agreements. | GAO-16-738T

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TESTIMONY

Statement of

Ronald O'Rourke
Specialist in Naval Affairs

Before

House Transportation and Infrastructure Committee
Coast Guard and Maritime Transportation Subcommittee

Hearing on

Coast Guard Arctic Implementation Capabilities

July 12, 2016

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Chairman Hunter, Ranking Member Garamendi, distinguished members of the subcommittee, thank you for the opportunity to appear before you today to discuss Coast Guard Arctic implementation capabilities. As requested, my testimony focuses on acquisition of polar icebreakers, and particularly on savings that could be realized in acquiring two polar icebreakers.

Portions of this statement are adapted from the CRS report on polar icebreaker modernization,[1] which was first published in February 2008 and has been updated periodically since then. For background information on the Coast Guard's polar icebreaker program, see **Appendix A** of this statement. For information on the idea of building Coast Guard polar icebreakers in a foreign shipyard, see **Appendix B**. For a general summary of acquisition lessons learned in Navy shipbuilding, see **Appendix C**.

Some Key Points Up Front

Some key points that can be made up front include the following:

- Given the potential need set forth in the June 2013 Department of Homeland Security (DHS) polar icebreaker Mission Need Statement (MNS) for a fleet of up to three heavy polar icebreakers and three medium polar icebreakers (i.e., "3+3"), the entry into service of the new polar icebreaker that the Administration wants to begin building in FY2020 would narrow but not necessarily close a potential gap in polar icebreaking capacity. Any remaining gap in capacity could be further narrowed by the entry into service of a second new polar icebreaker. The September 1, 2015, White House fact sheet stating that the Administration wants to begin building a new polar icebreaker in 2020 also states that the Administration will "begin planning for construction of additional icebreakers" beyond the one that the Administration wants to begin building in 2020.[2]
- There are various possible approaches for acquiring two or more new polar icebreakers. One approach, which might be viewed as a potential baseline or default approach, would be to build the ships several years apart from one another, contract for them separately, and purchase materials and components for them separately. A potential alternative approach would be to build the ships only a few (i.e., one or two or three) years apart from one another, contract for them together under a block buy contract, and carry out a combined purchase of materials and components for the two ships.
- Compared to the potential baseline or default approach outlined above, the potential alternative approach outlined above would compress the funding stream for the acquisition of two polar icebreakers into a smaller number of years, increasing average annual funding requirements, and reduce policymaker flexibility regarding whether and when to build the second ship, what design to build it to, and what shipyard to build it in. It would also likely get the second ship into service sooner, more quickly narrowing the potential gap in polar icebreaking capacity, and it could reduce the combined acquisition cost of the two ships by at least 5% (i.e., roughly $100 million), and perhaps closer to 10% (i.e., closer to $200 million).
- The Senate Appropriations Committee, in its report (S.Rept. 114-263 of May 26, 2016) on the FY2017 Department of Defense (DOD) Appropriations Act (S. 3000),

[1] CRS Report RL34391, *Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress*, by Ronald O'Rourke.

[2] The White House, "Fact Sheet: President Obama Announces New Investments to Enhance Safety and Security in the Changing Arctic," September 1, 2015, accessed June 28, 2016, at https://www.whitehouse.gov/the-press-office/2015/09/01/fact-sheet-president-obama-announces-new-investments-enhance-safety-and.

recommends $1 billion in the Navy's shipbuilding account for a new polar icebreaker. This sum would more or less fully fund the acquisition of that ship. Alternatively, with congressional approval, an appropriation of $1 billion could be used to partially fund a two-ship acquisition. Under this scenario, the $1 billion would be used to develop the design, fund a combined purchase of materials and components for the two ships, and initiate shipyard construction activities on the first ship. The remainder of the funding for the two-ship acquisition would be provided in one more fiscal years beyond FY2017.

- There are two options for temporarily narrowing a gap in polar icebreaking capability in the nearer term (i.e., prior to the entry into service of one or more new polar icebreakers). One would be to further extend the service life of *Polar Star* and/or repair and extend the service life of *Polar Sea*. The other would be to charter one or more foreign polar icebreakers, if such ships were available for charter. The United States has used both approaches in the past to mitigate polar icebreaking capacity gaps. Whether either of these approaches would be feasible and cost effective in coming years would need to be examined. The Coast Guard is currently examining the feasibility and potential cost effectiveness of either further extending the service life of *Polar Star* or repairing and extending the service life of *Polar Sea*.

DHS Polar Icebreaker Mission Need Statement

The June 2013 DHS polar icebreaker MNS states (emphasis added):

> This Mission Need Statement (MNS) establishes the need for polar icebreaker capabilities provided by the Coast Guard, to ensure that it can meet current and future mission requirements in the polar regions....
>
> **Current requirements and future projections based upon cutter demand modeling, as detailed in the HLMAR [High Latitude Mission Analysis Report], indicate the Coast Guard will need to expand its icebreaking capacity, potentially requiring a fleet of up to six icebreakers (3 heavy and 3 medium) to adequately meet mission demands in the high latitudes**.... The analysis took into account both the Coast Guard statutory mission requirements and additional requirements for year-round presence in both polar regions detailed in the Naval Operations Concept (NOC) 2010. The NOC describes when, where, and how U.S. naval forces will contribute to enhancing security, preventing conflict, and prevailing in war. The analysis also evaluated employing single and multi-crewing concepts. Baseline employment standards for single and multi-crew concepts used 185 DAFHP [days away from home port] and 250/280 DAFHP, respectively. Strategic home porting analysis based upon existing infrastructure and distance to operational areas provided the final input to determine icebreaker capacity demand.[3]

At a November 17, 2015, hearing before the Europe, Eurasia, and Emerging Threats subcommittee and the Western Hemisphere subcommittee of the House Foreign Affairs Committee, then-Vice Admiral Charles Michel, the Vice Commandant of the Coast Guard, stated in his prepared statement that "Polar icebreakers are critical to supporting key national priorities laid out in the National Security Presidential

[3] Department of Homeland Security, *Polar Icebreaking Recapitalization Project Mission Need Statement, Version 1.0*, approved by DHS June 28, 2013, pp. 1, 9. As discussed in the CRS report on polar icebreaker modernization, although polar ice is diminishing due to climate change, observers generally expect that this development will not eliminate the need for U.S. polar icebreakers, and in some respects might increase mission demands for them. Even with the diminishment of polar ice, there are still significant ice-covered areas in the polar regions. Diminishment of polar ice could lead in coming years to increased commercial ship, cruise ship, and naval surface ship operations, as well as increased exploration for oil and other resources, in the Arctic—activities that could require increased levels of support from polar icebreakers. Changing ice conditions in Antarctic waters have made the McMurdo resupply mission more challenging since 2000. (See National Research Council, *Polar Icebreakers in a Changing World, An Assessment of U.S. Needs*, Washington, 2007, pp. 6-7, 14, 63.)

Directive on Arctic Region policy and the National Strategy for the Arctic Region."[4] During the discussion portion of the hearing, Michel testified that the "Coast Guard needs at least two heavy icebreakers to provide year-round assured access and self-rescueability in the polar regions."[5]

At a June 14, 2016, hearing before this subcommittee, Admiral Michel testified that "our commandant also testified that we need self-rescue capability for our heavy icebreaker and that includes the existing *Polar Star* that we have out there now. So that means at least two, the High Latitude study says three heavy polar icebreakers is what the Coast Guard's requirement is. So that's kind of where we're talking about for heavy icebreakers."[6]

Block Buy Contracting

Block buy contracting is one form of multiyear contracting; multiyear procurement (MYP) is another. The Navy in recent years has made extensive use of MYP and block buy contracting in its shipbuilding programs, and as a result has reduced its ship acquisition costs by billions of dollars. In contrast, the Coast Guard to date has not used block buy contracting or MYP in its ship acquisition programs.

The polar icebreaker program would not qualify for MYP because MYP cannot be used to acquire the lead ship in a class.[7] The polar icebreaker program could, however, be considered for block buy contracting. The Navy has used block buy contracts to procure the first four Virginia (SSN-774) class attack submarines as well as 22 ships (units 5 through 26) in the Littoral Combat Ship (LCS) program, and on June 30, 2016, awarded a block buy contract for the first six ships in the John Lewis (TAO-205) oiler shipbuilding program, previously known as the TAO(X) program.[8]

Congress needs to approve each use of block buy contracting. Block buy contracts can be awarded competitively and can be fixed price contracts. From a congressional perspective, tradeoffs in making greater use of multiyear contracting include the following:

- reduced congressional control over year-to-year spending, and tying the hands of future Congresses;
- reduced flexibility for making changes in shipbuilding programs in response to unforeseen changes in strategic or budgetary circumstances (which can cause any needed funding reductions to fall more heavily on programs not covered by multiyear contracts);
- a potential need to shift funding from later fiscal years to earlier fiscal years to fund up-front batch purchases of materials and components;[9]

[4] Testimony of Vice Admiral Charles D. Michel, Vice Commandant, U.S. Coast Guard, on "Arctic Operations" Before the House Foreign Affairs Committee—Western Hemisphere & Europe, Eurasia, and Emerging Threats Subcommittees, November 17, 2015, p. 3.

[5] Transcript of hearing.

[6] Transcript of hearing.

[7] Block buy contracting, unlike MYP, can be used at the outset of a shipbuilding program, starting with the lead ship in the class. MYP, in contrast, cannot be used until the lead ship has completed construction. This difference is due to the requirement under the statute governing MYP (10 U.S.C. 2306b) that a program must demonstrate design stability to qualify for MYP. In a shipbuilding program, design stability is typically demonstrated by completing the construction of the lead ship in the class.

[8] For more on these programs, including their actual or planned use of block buy contracting, see CRS Report RL32418, *Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress*, by Ronald O'Rourke, CRS Report RL33741, *Navy Littoral Combat Ship (LCS)/Frigate Program: Background and Issues for Congress*, by Ronald O'Rourke, and CRS Report R43546, *Navy John Lewis (TAO-205) Class Oiler Shipbuilding Program: Background and Issues for Congress*, by Ronald O'Rourke.

[9] In MYP contracts, these up-front batch purchases are called economic order quantity (EOQ) purchases.

- the risk of having to make penalty payments to shipbuilders if multiyear contracts need to be terminated due unavailability of funds needed for the continuation of the contracts; and
- the risk that materials and components purchased for ships to be procured in future years might go to waste if those ships are not eventually procured.

For additional background information on block buy contracting and MYP, see Appendix A of my testimony to this subcommittee of February 3, 2016[10] and the CRS report on MYP and block buy contracting.[11]

Potential Alternative Approaches for Acquiring Two Polar Icebreakers

There are various possible approaches for acquiring two or more new polar icebreakers. One approach, which might be viewed as a potential baseline or default approach, would be to build the ships several years apart from one another, contract for them separately, and purchase materials and components for them separately. A potential alternative approach would be to build the ships only a few (i.e., one or two or three) years apart from one another, contract for them together under a block buy contract, and carry out a combined purchase of materials and components for the two ships. Spacing the construction of two polar icebreakers closely together would not be new to Coast Guard polar icebreaker acquisition: Construction of *Polar Sea* began less than two years after construction began on *Polar Star*.[12]

Compared to the potential baseline or default approach for acquiring two polar icebreakers outlined above, the potential alternative approach outlined above would compress the funding stream for the acquisition of two polar icebreakers into a smaller number of years, increasing average annual funding requirements, and reduce policymaker flexibility regarding whether and when to build the second ship, what design to build it to, and what shipyard to build it in. It would also likely get the second ship into service sooner, more quickly narrowing the potential gap in polar icebreaking capacity, and it could reduce the combined acquisition cost of the two ships by at least 5% (i.e., roughly $100 million), and perhaps closer to 10% (i.e., closer to $200 million).

My testimony to this subcommittee on February 3, 2016, stated that "if using [block buy contracting] were to reduce the acquisition costs of a two-ship polar icebreaker program by about 5% (compared to costs under annual contracting), the combined savings on the two ships would amount to upwards of $100 million."[13] The larger estimated savings cited in my testimony today—at least 5%, and perhaps closer to 10%—includes the savings of about 5% from using block buy contracting and a combined purchase of

[10] Statement of Ronald O'Rourke, Specialist in Naval Affairs, Before House Transportation and Infrastructure Committee, Coast Guard and Maritime Transportation Subcommittee, Hearing on The Status of Coast Guard Cutter Acquisition Programs, February 3, 2016 (available as CRS Testimony TE10004, *The Status of Coast Guard Cutter Acquisition Programs*, by Ronald O'Rourke).

[11] CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by Ronald O'Rourke and Moshe Schwartz

[12] *Polar Star's* keel was laid down on May 15, 1972; *Polar Sea's* keel was laid down on November 27, 1973. The ships were launched (i.e., put into the water for the final stages of construction) on November 17, 1973, and June 24, 1975, respectively, and commissioned into service on January 19, 1976, and February 23, 1978, respectively. Source: *Jane's Fighting Ships 1980-81*, p. 701.

[13] CRS Testimony TE10004, *The Status of Coast Guard Cutter Acquisition Programs*, by Ronald O'Rourke, February 3, 2016, p. 6.

materials and components, plus additional savings from building the ships more closely together. **Table 1** summarizes the two acquisition approaches and the sources of savings.

Table 1. Two Approaches for Acquiring Two New Polar Icebreakers

	A potential baseline or default approach	A potential alternative approach	Sources of savings under potential alternative approach
Construction separation between ships	Construction of ships widely spaced—construction starts separated by several years	Construction of ships more closely spaced—construction starts separated by one or two or three years	Improved production learning curve (i.e., less loss of learning between first and second ship)
Contracting approach	Separate contracts	Single block buy contract	Shipyard optimizes work force and capital plant for a two-ship production run
Materials and components	Purchased separately for each ship	Combined purchase of at least some materials and components for both ships	Increased production economies of scale at material and component suppliers
Acquisition cost savings under potential alternative approach, compared to potential baseline or default approach	--	At least 5%, and perhaps closer to 10%	

Source: Table prepared by CRS.

If a shipyard that is awarded a contract to build one or more new polar icebreakers happens to be building other Coast Guard ships or Navy ships, the addition of the icebreaker work could marginally reduce the cost of those Coast Guard or Navy ships by absorbing some of the shipyard's fixed overhead costs. Any such savings could occur under either of the acquisition approaches shown in **Table 1**.

As an additional point relating to cost, it can be noted that while the Coast Guard's polar icebreaker industry data package[14] includes a notional schedule for the program through FY2020, as well as a description of the ship's mission, top-level capability requirements, and design parameters, it does not include a target acquisition cost or a target annual operation and support (O&S) cost.

Funding Coast Guard Polar Icebreakers Through Navy's Shipbuilding Account

As noted in **Appendix A**, the Coast Guard's strategy for funding the acquisition of a new polar icebreaker appears to depend on having other federal agencies help pay for part of the ship's cost. There is some precedent for funding the acquisition of polar icebreakers through the Navy's shipbuilding account (i.e., the Shipbuilding and Conversion, Navy, or SCN, appropriation account within the DOD Budget): The acquisition of the Coast Guard's medium polar icebreaker, *Healy*, was funded largely through that account.[15] It can also be noted that some new-construction oceanographic research ships operated by the

[14] U.S. Coast Guard, Polar Icebreaker Industry Data Package, 24 pp., undated but released on January 13, 2016, accessed June 30, 2016, at: http://www.uscg.mil/ACQUISITION/icebreaker/pdf/PIBIndustryDataPackage_Feb2%20%282%29.pdf .

[15] The somewhat complicated funding history for the ship is as follows: The Coast Guard's proposed FY1990 budget requested $244 million for the acquisition of an icebreaker. The FY1990 DOD appropriations act (H.R. 3072/P.L. 101-165 of November (continued...)

National Oceanic and Atmospheric Administration (NOAA—an agency within the Department of Commerce) have been funded through the Navy's shipbuilding account.

The Senate Appropriations Committee, in its report (S.Rept. 114-263 of May 26, 2016) on the FY2017 DOD Appropriations Act (S. 3000), recommends $1 billion in the Navy's shipbuilding account for a new polar icebreaker. This sum would more or less fully fund the acquisition of that ship. Alternatively, with congressional approval, an appropriation of $1 billion could be used to partially fund a two-ship acquisition. Under this scenario, the $1 billion would be used to develop the design, fund a combined purchase of materials and components for the two ships, and initiate shipyard construction activities on the first ship. The remainder of the funding for the two-ship acquisition would be provided in one or more fiscal years beyond FY2017.

Options for Temporarily Narrowing a Polar Icebreaking Capacity Gap in Nearer Term

A polar icebreaker that begins construction in FY2020 might enter service in 2024 or 2025. Following refurbishment intended to extend its service life, *Polar Star* reentered service in December 2012 for a period of 7 to 10 years—a period that will end between December 2019 and December 2022. There are two options for temporarily narrowing a gap in polar icebreaking capability in the nearer term (i.e., prior to the entry into service of one or more new polar icebreakers). One would be to further extend the service life of *Polar Star* and/or repair and extend the service life of *Polar Sea*. The other would be to charter one or more foreign polar icebreakers, if such ships were available for charter. The United States has used both of these approaches in the past to mitigate polar icebreaking capacity gaps:

- In addition to the work done to extend the service life of *Polar Star* by an additional 7 to 10 years, the Coast Guard in the 1970s mitigated a polar icebreaking capacity gap by putting two of its older *Wind*-class icebreakers through a vessel rehabilitation and modernization (VRAM) program.[16]
- Since 2005, the National Science Foundation (NSF) has occasionally chartered foreign polar icebreakers—specifically, the Russian icebreakers *Krasin* and *Vladimir Ignatyuk*, and the Swedish icebreaker *Oden*—to help perform icebreaking missions in polar waters.[17]

(...continued)

21, 1989) provided $329 million for ship in the SCN account. (See pages 77 and 78 of H.Rept. 101-345 of November 13, 1989.) This figure was then reduced by $4.2 million by a sequester carried out under the Balanced Budget And Emergency Deficit Control Act of 1985, also known as the Gramm-Rudman-Hollings Act (H.J.Res. 372/P.L. 99-177 of December 12, 1985). Another $50 million was rescinded by the Dire Emergency Supplemental Appropriations for Disaster Assistance, Food Stamps, Unemployment Compensation Administration, and Other Urgent Needs, and Transfers, and Reducing Funds Budgeted for Military Spending Act of 1990 (H.R. 4404/P.L. 101-302 of May 25, 1990). An additional $59 million for the ship was then appropriated in the FY1992 DOD Appropriations Act (H.R. 2521/P.L. 102-172 of November 26, 1991). Also, an additional $40.4 million in acquisition funding for the ship was provided through a series of annual appropriations in the Coast Guard's AC&I account from FY1988 through FY2001. The resulting net funding for the ship was thus $374.2 million, of which $333.8 million, or 89.2%, was DOD funding, and $40.4 million, or 10.8%, was Coast Guard acquisition funding. (Source: Undated Coast Guard information paper provided to CRS by Coast Guard legislative liaison office, March 3, 2016.)

[16] See National Research Council, *Polar Icebreakers in a Changing World: An Assessment of U.S. Needs*, Washington, 2007, p. 55. See also Donald L. Canney, "Icebreakers and the U.S. Coast Guard," accessed June 28, 2016, at: http://www.uscg.mil/history/webcutters/Icebreakers.asp.

[17] Regarding the charters of *Krasin* and *Oden*, see National Research Council, *Polar Icebreakers in a Changing World: An Assessment of U.S. Needs*, Washington, 2007, pp. 6, 14, 63, 80, 97, 111, and U.S. Coast Guard Research & Development Center and ABS Consulting, *Polar Icebreaker Options, Paths Forward to Accomplish U.S. Coast Guard Missions and Contribute to* (continued...)

Whether either of these approaches—extending the service life of *Polar Star* and/or *Polar Sea*, or chartering a foreign polar icebreaker—would be feasible and cost effective in coming years would need to be examined.

Extending Service Life of *Polar Star* and/or *Polar Sea*

The Coast Guard states that it is studying the option of extending the service life of *Polar Sea* or *Polar Star*:

> One of Coast Guard's two polar-class icebreakers (POLAR STAR) is operational following a reactivation in 2013 that provided an estimated 7-10 years of useful life. The second (POLAR SEA) is out of service and undergoing a Material Condition Assessment and an Alternatives Analysis to evaluate the feasibility of reactivation. To ensure the Nation is able to maintain heavy icebreaking capability until replacement assets are delivered, the Coast Guard is evaluating extending the service life of one of these icebreakers. Results from the Materiel Condition Assessment and Alternatives Analysis, planned for 2016, will inform selection of the candidate icebreaker. Funds requested [for FY2017] ($3 million) [in the Survey and Design—Vessel and Boats line of the Coast Guard's AC&I account] will support the specification development for the reactivation/sustainment of the selected icebreaker.[18]

At a June 26, 2013, hearing before this subcommittee, Vice Admiral John P. Currier, the Vice Commandant of the Coast Guard, testified that repairing and reactivating *Polar Sea* for an additional 7 to 10 years of service would require about three years of repair work at a cost of about $100 million.[19]

A business case analysis required by Section 222 of the Coast Guard and Maritime Transportation Act of 2012 (H.R. 2838/P.L. 112-213 of December 20, 2102) and submitted to Congress with a cover date of November 7, 2013, states:

> A total of 43 mission critical systems in five general categories were assessed and assigned a condition rating. Overall, Propulsion, Auxiliary and Prime Mission Equipment are rated Poor to Fair, while Structure and Habitability are rated Fair to Good. POLAR SEA reactivation is estimated to cost $99.2 million (excluding annual operations and support costs) to provide 7-10 years of service to the Coast Guard. Given the age of the icebreaker, operations and support costs are projected to rise from $36.6 million in the first year of operation to $52.8 million in the tenth year of operation. Combining reactivation costs and point estimates for operating costs, reactivation would cost $573.9 million. Accounting for operational and technical uncertainties, using a 90% Confidence Level Risk Analysis, the total potential cost rises to $751.7 million.
>
> Arctic seasonal icebreaking demands through 2022 can be met with existing and planned Coast Guard assets, as current requirements do not justify the need for heavy icebreaking capability in the Arctic. Heavy icebreaker capability is needed to perform Operation Deep Freeze in Antarctica, but Coast Guard assets may not be the only option available to the National Science Foundation to support this activity. Although a second heavy icebreaker would provide redundancy, the cost of this redundant capability would come at the expense of more pressing and immediate operational demands. POLAR STAR, when fully reactivated, will provide heavy icebreaker capability until a new icebreaker can be delivered to meet both current and emerging requirements.[20]

(...continued)

Mission Critical National Science Needs, May 17, 2011, pp. 9 , 14.

[18] Department of Homeland Security, United States Coast Guard, *Fiscal Year 2017 Congressional Justification*, pp. CG-AC&I-29 and CG-AC&I-30 (pdf pages 171 and 172 of 407).

[19] Transcript of hearing.

[20] U.S. Coast Guard, *USCGC POLAR SEA Business Case Analysis, 2103 Report to Congress*, November 7, 2013, p. 4. The report was accessed April 9, 2014, at http://assets.fiercemarkets.net/public/sites/govit/polarsea_businesscasanalysis_nov2013.pdf. See (continued...)

At a July 23, 2014, hearing before this subcommittee, Vice Admiral Peter Neffenger, the Vice Commandant of the Coast Guard, testified that "as I understand it, that $100 million [estimate for reactivating *Polar Sea*] was a snapshot in time if we were to have begun at that point to reactivate the vessel. We believe that there's been some additional deterioration [in the ship's condition] in the 2.5 years it's been sitting [at pier].... But I suspect that it will be something more than $100 million once we do the assessment [of the ship's condition]."[21]

In an interview published on September 26, 2015, Admiral Paul Zukunft, the Commandant of the Coast Guard, stated:

> One course of action is to reactivate an even older ship, the *Polar Sea*, and we're doing an assessment on that to see what would it take to reactivate it. So we'll make that decision next year. So there's always this cut to the chase, how much is it going to cost?
>
> This is a ship that's been laid up now for five years, parts were cannibalized in order to get the *Polar Star* running, it hasn't had a crew on it for that same amount of time as well. So it's like an old car that's been laid up without an engine in it, an engine that's been stripped of its parts. It's not until you really tear into it, and what you maybe thought you could do for $100 million is now $200, is now $300, $400 and you reach a point where you keep throwing good money after bad. You step back and say, well if it was a car, you should've bought a new car instead.
>
> The other part to look at with these old icebreakers is if they don't meet today's MARPOL code [a regulation to limit accidental or operational pollution from ships] for environmental compliance. If we are setting the standards, we the United State Coast Guard, ship-going standards to operate in the Arctic under that polar code, then by golly we ought to be in compliance as well and not in violation. So as we look at new construction, we want to make sure we're in compliance with modern day environmental standards up there as well.

When asked by the interviewer, as a follow-up question, whether he has "any idea of costs for reactivating the *Polar Sea*," Zukunft replied:

> That's why we're doing this full assessment, but we should know probably within a year from now, and what that will provide us is a floor. It will cost not less than, and I would never give an exact amount because it's not until you tear into this with an old ship in trying to find new parts and the like, those costs in all likelihood will grow over time.[22]

At the June 14, 2016, hearing before this subcommittee, Admiral Michel testified that

> We just had *Polar Sea*, which is inoperable currently, out of the water at Vigor Shipyard, and a—an assessment is due to the committee on July the 24th, as promised by the commandant, a material assessment of that particular vessel. And we are on schedule to deliver that to you.
>
> But all those decisions on a rolling recapitalization for *Polar Star* or what we want to do with *Polar Sea* need to be judged in context. And I have under way an alternatives analysis that will take a look at how we want to bridge out to that new icebreaker.
>
> And that's what I'd like to do is bridge out to that new construction icebreaker that I request the Congress' support and—and assistance in the president's budget request.[23]

(...continued)

also "Second Heavy Icebreaker Not Necessary Through 2022, Says Coast Guard," Fierce Homeland Security (http://www.fiercehomelandsecurity.com), January 19, 2014, which includes a link to the assets.fiercemarkets.net site at which the report was posted.

[21] Transcript of hearing.

[22] Jacqueline Klimas, "Interview: Adm. Paul Zukunft, Coast Guard Commandant," *Washington Examiner*, September 26, 2015. Material in brackets as in original.

[23] Transcript of hearing.

Chartering a Foreign Polar Icebreaker

The feasibility of the option of chartering a foreign polar icebreaker would depend on whether a polar icebreaker were available for charter at the time of the year when the United States would need it to perform desired missions in the Arctic or Antarctic. Foreign polar icebreakers like *Krasin, Vladimir Ignatyuk,* and *Oden*, mentioned above, are used by their own countries for polar icebreaking operations, and may not always be available for charter when the United States might want to use them.

If a foreign polar icebreaker were available for charter, the potential cost effectiveness of this option would then depend on the cost of the charter, the ability of the ship to perform U.S. polar icebreaker missions, and how these costs and capabilities compare to the option of extending the service life of *Polar Star* and/or *Polar Sea.*

The Coast Guard states that

> NSF leased the icebreaker KRASIN from Russia from 2005-2006, ODEN from the Swedish government from 2007-2010, and VLADIMIR IGNATYUK from Russia in 2012 to support the McMurdo resupply mission. All leases were time charters, and crews were supplied with the leases. As a contingency measure, NSF obtained assurances of assistance from other vessels in the area, such as the Chinese flagged [icebreaking] vessel XUE LONG, in the event they encountered difficulty. They also hired icebreaker captains with previous McMurdo experience to supplement the crew. NSF acquired these leases through a RFP process, and had no assurances that icebreakers would be available to perform the mission, or what price would be quoted.
>
> This process came with risks, as there was no way to gauge icebreaker availability until NSF received responses to their RFP. Additionally, a foreign-flagged commercial or state vessel can become unavailable for a variety of environmental and political reasons. For example, the Swedish government abruptly terminated their contract during the spring/summer of 2011, and NSF was left without a platform to conduct its mission. NSF requested support from CGC HEALY, but it was employed in the Arctic. NSF ultimately leased the Russian icebreaker VLADIMIR IGNATYUK. After that incident, NSF decided to utilize CGC POLAR STAR to support the McMurdo mission, which it has been doing since 2013.[24]

At the June 14, 2016, hearing, the following exchange occurred:

> REPRESENTATIVE HUNTER (Chairman):
>
> How do you plan on—on filling the capability gap until you get a heavy icebreaker, which is 10 years at the least based on the best projections of Congress and everybody working together? You still haven't answered that one.
>
> ADMIRAL MICHEL:
>
> Well, right—the alternatives now, since we'll provide the answer to that, and it's probably going to be either a rolling recapitalization of the *Polar Star* or to try to bring—let *Polar Star* taper off and then try to bring *Polar Sea* back on and bridge out to the new icebreaker.
>
> I do not know which one at this point, which path we would want to take. I'm not aware of any other—we've looked out there for vessels to lease for heavy icebreaking capabilities. There's nothing out there on planet earth that you can lease in the heavy icebreaking area. So that's kind of where we are, sir.
>
> HUNTER:
>
> Was it the—the Finns that came into my office?

[24] Source: Email from Guard Office of Congressional Affairs to CRS, July 8, 2016.

> (UNKNOWN)
>
> Mm-hmm.
>
> HUNTER:
>
> Can't remember whether we had the Norwegians or the Finns. I mean, they—have you—you've obviously looked at that, right?
>
> MICHEL:
>
> Yes. As a matter of fact I—I traveled to Sweden and Finland...
>
> HUNTER:
>
> Yeah.
>
> MICHEL:
>
> ... and talked to them. And they do not have heavy icebreaking capability that will meet the needs as in the FedBizOpps. As a matter of fact, in—when I'm talking FedBizOpps [I mean] there's a technical package that the Coast Guard put out for our [new] heavy icebreaker [i.e., the one that the Administration wants to begin building in 2020].
>
> It kind of lays out our basic requirements including the long pole in the tent which is the icebreaking requirement, which is six foot minimum at three knots, desirable eight-foot minimum at three knots and then 21 feet backing and ramming.
>
> When I talked to the shipbuilders over there, they said there is not a vessel like that that currently exists that will meet those requirements in the—in the FedBizOpps technical package. So you'd have to build a vessel like that. And that's the type of vessel that we're looking for.[25]

Mr. Chairman, this concludes my statement. Thank you again for the opportunity to testify, and I will be pleased to respond to any questions the subcommittee may have.

[25] Transcript of hearing.

Appendix A. Coast Guard Polar Icebreaker Program

This appendix presents background information o the Coast Guard's program for acquiring a new polar icebreaker. It is adapted from the CRS report on polar icebreaker modernization.

Overview

The Coast Guard's proposed FY2017 budget requests $150 million in acquisition funding for a new polar icebreaker that the Coast Guard wants to begin building in FY2020. The Coast Guard's FY2017-FY2021 five-year Capital Investment Plan (CIP) includes a total of $780 million in acquisition funding for a new polar icebreaker, including the $150 million requested for FY2017, $200 million projected for FY2019 and FY2020, and $430 million projected for FY2021. The total acquisition cost of the ship has not been officially estimated but might be roughly $1 billion, including design costs.

The project to acquire a new polar icebreaker was initiated in the Coast Guard's FY2013 budget submission. The project has received about $15.6 million in acquisition funding through FY2016, including $7.609 million in FY2013, $2.0 million in FY2014, zero in FY2015, and $6.0 million in FY2016. The $150 million requested for FY2017 is the first major increment of acquisition funding requested for the ship and would fund planning design activities required to begin production of the ship in FY2020.

Desired Capabilities for New Polar Icebreaker

The Coast Guard's key performance parameters (KPPs) for a new polar icebreaker include the following:

- an ability to break through 6 feet of ice at 3 knots (threshold) or 8 feet of ice at three knots (objective);[26]
- an ability to break through ridged ice of 21 feet;
- an ability to operate without replenishment (i.e., resupply) for 80 days (threshold) or 90 days (objective); and
- an ability to exchange voice and data with DHS, Coast Guard, Defense Department units, and other stakeholders.[27]

Additional desired capabilities include the following:

- an ability to operate for a total of 3,300 hours (the equivalent of 137.5 days) per year (threshold) or a total of 4,050 hours (the equivalent of 168.75 days) per year (objective);
- an operational availability (i.e., percentage of time available for operation) of 85% (threshold) or 92% (objective); and
- a space and weight allowance for accommodating a communication workspace (objective) or an installed communication workspace (threshold).[28]

[26] The terms *threshold* and *objective* are acquisition terms. Threshold can be translated roughly as minimum required capability. Objective can be translated roughly as maximum or preferred capability (if feasible and affordable).

[27] Coast Guard polar icebreaker program industry day briefing entitled "Polar Icebreaker (PIB) Acquisition Program Industry Engagement," slide 23, accessed April 4, 2016, at http://www.uscg.mil/ACQUISITION/icebreaker/pdf/Industry%20Day%2018%20March%202016.pdf.

[28] Coast Guard polar icebreaker program industry day briefing entitled "Polar Icebreaker (PIB) Acquisition Program Industry Engagement," slide 32, accessed April 4, 2016, at http://www.uscg.mil/ACQUISITION/icebreaker/pdf/Industry%20Day%2018%20March%202016.pdf.

The Coast Guard states that the desired capabilities for a new polar icebreaker are similar to the capabilities of *Polar Star* and *Polar Sea* in the following general ways:

- the ability to conduct long-range, high-endurance, independent operations with heavy icebreaking capability;
- flexibility in personnel support spaces and systems;
- interoperability to support interagency and interservice mission execution.[29]

The Coast Guard states that the desired capabilities for a new polar icebreaker differ from the capabilities of *Polar Star* and *Polar Sea* in the following general ways:

- features for improved reliability, maintainability, supportability, operational availability, and system redundancy;
- features for meeting modern environmental standards;
- features for improved ship control;
- features for modern human habitability and human systems integration; and
- space, weight, and power margins (i.e., growth margin) for accepting specialized capabilities.[30]

Notional Program Schedule

The Coast Guard's notional schedule for the program, which could change, shows a draft Request for Proposals (RFP) being released in the first quarter of FY2017, a final RFP being released in the fourth quarter of FY2017 or the first quarter of FY2018, Coast Guard evaluation of received proposals taking place from the third or fourth quarter of FY2018 through the third or fourth quarter of FY2019, a contract award being made in the third or fourth quarter of FY2019, and construction of the ship beginning in the third or fourth quarter of FY2019.[31]

Strategy of Using Funding Contributions from Other Agencies

The Coast Guard's strategy for funding the acquisition of a new polar icebreaker appears to depend on having other federal agencies help pay for part of the ship's cost. The Coast Guard's website for the polar icebreaker acquisition project states:

> A new, heavy polar icebreaker will be designed to meet the requirements of multiple government stakeholders that require access to and presence within the polar regions. In order to appropriately fund the acquisition of a new polar icebreaker, a "whole-of-government" funding approach is necessary to acquire this national asset.[32]

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[29] Coast Guard polar icebreaker program industry day briefing entitled "Polar Icebreaker (PIB) Acquisition Program Industry Engagement," slide 24, accessed April 4, 2016, at http://www.uscg.mil/ACQUISITION/icebreaker/pdf/Industry%20Day%2018%20March%202016.pdf.

[30] Coast Guard polar icebreaker program industry day briefing entitled "Polar Icebreaker (PIB) Acquisition Program Industry Engagement," slide 26, accessed April 4, 2016, at http://www.uscg.mil/ACQUISITION/icebreaker/pdf/Industry%20Day%2018%20March%202016.pdf.

[31] Coast Guard polar icebreaker program industry day briefing entitled "Polar Icebreaker (PIB) Acquisition Program Industry Engagement," slide 14, accessed April 4, 2016, at http://www.uscg.mil/ACQUISITION/icebreaker/pdf/Industry%20Day%2018%20March%202016.pdf.

[32] U.S. Coast Guard, "Polar Icebreaker," accessed April 4, 2016, at http://www.uscg.mil/acquisition/icebreaker/default.asp.

Funding Requested in FY2013-FY2017 Submissions

FY2013 Submission

The Administration's FY2013 budget submission initiated a new project for the design and construction of a new polar icebreaker, and included $860 million over five years for the acquisition of the ship (**Table 2**)—enough or almost enough to fully fund the acquisition of a new polar icebreaker. (Any remaining needed funding might have been projected for FY2018 and perhaps also FY2019, which were beyond the five-year window of the FY2013 budget submission.) The submission stated that DHS anticipated awarding a construction contract for the ship "within the next five years" (i.e., by FY2018) and taking delivery on the ship "within a decade" (i.e., by 2023).[33]

FY2014 Submission

The Administration's FY2014 budget submission reduced the five-year funding for a new polar icebreaker to $230 million (**Table 2**)—a 73% reduction from the figure in the FY2013 budget submission—but still stated that DHS anticipated awarding a construction contract for the ship "within the next four years" (i.e., by FY2018).[34]

FY2015 Submission

The Administration's FY2015 budget submission maintained five-year funding for a new polar icebreaker at $230 million (**Table 2**), but did not state when a construction contract for the ship might be awarded, creating uncertainty about the timing of the project.[35]

FY2016 Submission

The Administration's FY2016 budget submission, submitted to Congress in February 2015, reduced five-year funding for a new polar icebreaker further, to $166 million (**Table 2**)—an 81% reduction from the figure in the FY2013 budget submission—and again did not state when a construction contract for the ship might be awarded, maintaining the uncertainty about the timing of the project.[36]

On September 1, 2015, the White House issued a fact sheet in conjunction with a visit to Alaska by President Obama indicating that the Administration, in its own internal planning, had at some point over the past two years deferred acquisition of a new polar icebreaker to FY2022, but that this has now been changed to FY2020.[37] The newly announced construction start date of FY2020 is a two-year acceleration

[33] U.S. Department of Homeland Security, *Annual Performance Report, Fiscal Years 2011-2013*, p. CG-AC&I-40 (pdf page 1,777 of 3,134).

[34] Department of Homeland Security, United States Coast Guard, *Fiscal Year 2014 Congressional Justification*, p. CG-AC&I-32 (pdf page 204 of 403).

[35] Department of Homeland Security, United States Coast Guard, *Fiscal Year 2015, Congressional Justification*, p. CG-AC&I-42 (pdf page 196 of 474).

[36] Department of Homeland Security, United States Coast Guard, *Fiscal Year 2016 Congressional Justification*, p. CG-AC&I-36 (pdf page 202 of 518).

[37] The White House, "Fact Sheet: President Obama Announces New Investments to Enhance Safety and Security in the Changing Arctic," September 1, 2015, accessed September 2, 2015, at https://www.whitehouse.gov/the-press-office/2015/09/01/fact-sheet-president-obama-announces-new-investments-enhance-safety-and. Regarding icebreakers, the fact sheet states:

> **Accelerating the acquisition of new Coast Guard icebreakers.** After World War II, the United States Coast Guard had seven icebreakers in its fleet—four under the U.S. Navy and three under the U.S. Coast Guard. Today, the United States technically has three icebreakers in its fleet—all under the command of the U.S. Coast Guard. However, when age and reliability are taken into account, the fleet is down to the

(continued...)

from the previously unpublicized date of FY2022, and a two-year deferral from the FY2018 date implied in the FY2013 and FY2014 budget submissions. The fact sheet states that the Administration will also "begin planning for construction of additional icebreakers" beyond the one that the Administration proposes to begin building in FY2020.

On January 13, 2016, the Coast Guard announced that it intended to hold an industry day for the polar icebreaker program, followed by one-on-one meetings between the Coast Guard and prospective shipbuilders and ship designers, as a part of the Coast Guard's ongoing market research for the program.[38] The industry day was held on March 18, 2016, and the one-on-one meetings between the Coast Guard and industry officials were scheduled for March 28-31, with industry feedback to be submitted to the Coast Guard by April 5, 2016.[39]

FY2017 Submission

The Coast Guard's proposed FY2017 budget requests $150 million in acquisition funding for a new polar icebreaker that the Coast Guard wants to begin building in FY2020. The figure of $150 million includes $147.6 million in the polar icebreaker line of the Coast Guard's Acquisition, Construction, and Improvements (AC&I) account, and $2.4 million that is embedded in the personnel and management line in the AC&I account.[40] The Coast Guard's FY2017-FY2021 five-year Capital Investment Plan (CIP) includes a total of $780 million in acquisition funding for a new polar icebreaker, including the $150 million requested for FY2017, $200 million projected for FY2019 and FY2020, and $430 million projected for FY2021.

As shown in **Table 2**, the $150 million requested for FY2017 is the first major increment of acquisition funding requested (not just projected for a future fiscal year) for a new polar icebreaker. The Coast Guard states that the requested $150 million

> Funds completion of programmatic planning documents and award of a contract for Detail Design and all other design activities leading to commencement of production activities for a heavy polar-class icebreaker by 2020. To maintain an accelerated acquisition schedule, the 2017 request forward funds acquisition activities to occur through 2019. The availability of these funds will give Coast Guard maximum flexibility to implement an optimal acquisition approach....

(...continued)

> equivalent of two fully functional icebreakers and only one heavy-duty icebreaker. Russia, on the other hand, has forty icebreakers and another eleven planned or under construction.
>
> The growth of human activity in the Arctic region will require highly engaged stewardship to maintain the open seas necessary for global commerce and scientific research, allow for search and rescue activities, and provide for regional peace and stability. Accordingly, meeting these challenges requires the United States to develop and maintain capacity for year-round access to greater expanses within polar regions.
>
> That is why the Administration will propose to accelerate acquisition of a replacement heavy icebreaker to 2020 from 2022, begin planning for construction of additional icebreakers, and call on Congress to work with the Administration to provide sufficient resources to fund these critical investments. These heavy icebreakers will ensure that the United States can meet our national interests, protect and manage our natural resources, and strengthen our international, state, local, and tribal relationships.

[38] "USCG Polar Class Icebreaker Replacement Program," accessed January 15, 2016, at https://www.fbo.gov/index?s=opportunity&mode=form&id=a778e49349e443d2658666e19ee100e9&tab=core&tabmode=list&=.

[39] "Heavy Polar Icebreaker Industry Engagement Activities," accessed April 4, 2016, at http://www.uscg.mil/ACQUISITION/icebreaker/Industry_Day_031816.asp.

[40] Department of Homeland Security, United States Coast Guard, *Fiscal Year 2017 Congressional Justification*, pp. CG-AC&I-28 and CG-AC&I-47 (pdf pages 170 and 189 of 407).

Activities in FY 2017 will focus on completion of programmatic planning documents and issue of the Request for Proposal (RFP) for Detail Design.[41]

Table 2. Funding for Acquisition of New Polar Icebreaker Under FY2013-FY2017 Budget Submissions

(millions of then-year dollars)

	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	5-year total
FY2013 budget	8	120	380	270	82					860
FY2014 budget		2	8	100	20	100				230
FY2015 budget			6	4	100	20	100			230
FY2016 budget				4	10	2	100	50		166
FY2017 budget					150	0	50	150	430	780

Source: Table prepared by CRS based on Coast Guard FY2013-FY2017 budget submissions.

Notes: For each line in the table, the first figure shown (e.g., $8 million in the case of the FY2013 budget) is the amount of funding that was requested for that fiscal year. Actual funding figures for FY2013-FY2016 are as follows: $7.609 million in FY2013; $2.0 million in FY2014; zero in FY2015; and $6.0 million in FY2016, for a total of $15.609 million for the period FY2013-FY2016.

The FY2017 requested figure of $150 million includes $147.6 million in the polar icebreaker line of the Coast Guard's Acquisition, Construction, and Improvements (AC&I) account, and $2.4 million that is embedded in the personnel and management line in the AC&I account. The projected figures for FY2018-FY2021include only funding in the polar icebreaker line.

Actual Prior-Year Funding in FY2013-FY2016

In each line of **Table 2**, the first figure shown (e.g., $8 million in the case of the FY2013 budget) is the amount of funding that was requested for that fiscal year. Actual funding figures for FY2013-FY2016 are as follows: $7.609 million in FY2013; $2.0 million in FY2014; zero in FY2015; and $6.0 million in FY2016, for a total of $15.609 million for the period FY2013-FY2016.

[41] Department of Homeland Security, U.S. Coast Guard, *Fiscal Year 2017 Congressional Justification*, p. CG-AC&I-47 (pdf page 189 of 407).

Appendix B. Building U.S. Coast Guard Polar Icebreakers in a Foreign Shipyard

This appendix presents background information on the idea of building U.S. Coast Guard polar icebreakers in a foreign shipyard. Some observers believe the acquisition cost of U.S. Coast Guard polar icebreakers could be reduced, perhaps substantially, by building them in a foreign shipyard, such as a yard in one of the Nordic countries that is experienced in building icebreakers. Shipyards in Finland reportedly are interested in building polar icebreakers for the U.S. Coast Guard.[42]

Some observers have suggested that a U.S. law known as the Jones Act prevents the U.S. Coast Guard from buying or operating a foreign-built polar icebreaker. The Jones Act, however, does not prevent the U.S. Coast Guard from buying or operating a foreign-built polar icebreaker.[43] Two other laws, however, are of note in connection with the idea of building a U.S. Coast Guard polar icebreaker in a foreign shipyard. One is 14 U.S.C. 665, which states:

> §665. Restriction on construction of vessels in foreign shipyards
>
> (a) Except as provided in subsection (b), no Coast Guard vessel, and no major component of the hull or superstructure of a Coast Guard vessel, may be constructed in a foreign shipyard.
>
> (b) The President may authorize exceptions to the prohibition in subsection (a) when the President determines that it is in the national security interest of the United States to do so. The President shall transmit notice to Congress of any such determination, and no contract may be made pursuant to the exception authorized until the end of the 30-day period beginning on the date the notice of such determination is received by Congress.

The other is 10 U.S.C. 7309, which states:

> §7309. Construction of vessels in foreign shipyards: prohibition
>
> (a) Prohibition.-Except as provided in subsection (b), no vessel to be constructed for any of the armed forces,[44] and no major component of the hull or superstructure of any such vessel, may be constructed in a foreign shipyard.

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[42] See, for example, Jim Paulin, "Finland Wants In On US Icebreaker Investment," *Alaska Dispatch News*, September 8, 2015.

[43] The Jones Act (Section 27 of the Merchant Marine Act of 1920, P.L. 66-261) applies to vessels transporting "merchandise" from one U.S. point to another U.S. point. It requires that such transportation be performed in U.S.-built vessels owned by U.S. citizens and registered in the United States; U.S. registration, in turn, requires that crew members be U.S. citizens. Merchandise is defined to include "merchandise owned by the U.S. Government, a State, or a subdivision of a State; and valueless material" (46 U.S.C. §55102). Merchandise is further defined at 19 U.S.C. §1401(c) to mean "goods, wares, and chattels of every description." It is the waterborne transportation of merchandise domestically that triggers the Jones Act. A vessel wishing to engage in such transportation would apply to the U.S. Coast Guard for a "coastwise endorsement." Thus, an icebreaker strictly performing the task it is designed for and not transporting cargo from one U.S. point to another would not be subject to the Jones Act.

The federal agency in charge of deciding what kind of maritime activity must comply with the Jones Act, U.S. Customs and Border Protection (CBP), has confirmed that icebreaking is not one of those activities. In a 2006 ruling, which appears to be its most recent ruling on the subject, CPB informed Alcoa, Inc. that it could use foreign-built and foreign-flagged vessels for icebreaking on the Hudson River in New York State. CBP reasoned that the transporting of equipment, supplies, and materials used on or from the vessel in effecting its service is not coastwise trade, provided that these articles are necessary for the accomplishment of the vessel's mission and are usually carried aboard the vessel as a matter of course. The 2006 ruling cited earlier rulings in 1974, 1985, and 2000 as precedent.

For more on the Jones Act, see CRS Report RS21566, *The Jones Act: An Overview*, by John Frittelli.

[44] 14 U.S.C. 1, which establishes the Coast Guard, states: "The Coast Guard, established January 28, 1915, shall be a military service and a branch of the armed forces of the United States at all times."

(b) Presidential Waiver for National Security Interest.-(1) The President may authorize exceptions to the prohibition in subsection (a) when the President determines that it is in the national security interest of the United States to do so.

(2) The President shall transmit notice to Congress of any such determination, and no contract may be made pursuant to the exception authorized until the end of the 30-day period beginning on the date on which the notice of the determination is received by Congress.

(c) Exception for Inflatable Boats.-An inflatable boat or a rigid inflatable boat, as defined by the Secretary of the Navy, is not a vessel for the purpose of the restriction in subsection (a).

Appendix C. A Summary of Some Acquisition Lessons Learned for Navy Shipbuilding

A general summary of lessons learned in Navy shipbuilding, reflecting comments made repeatedly by various sources over the years, includes the following:[45]

- **At the outset, get the operational requirements for the program right.** Properly identify the program's operational requirements at the outset. Manage risk by not trying to do too much in terms of the program's operational requirements, and perhaps seek a so-called 70%-to-80% solution (i.e., a design that is intended to provide 70%-80% of desired or ideal capabilities). Achieve a realistic balance up front between operational requirements, risks, and estimated costs.
- **Impose cost discipline up front.** Use realistic price estimates, and consider not only development and procurement costs, but life-cycle operation and support (O&S) costs.
- **Employ competition** where possible in the awarding of design and construction contracts.
- **Use a contract type that is appropriate for the amount of risk involved**, and structure its terms to align incentives with desired outcomes.
- **Minimize design/construction concurrency** by developing the design to a high level of completion before starting construction and by resisting changes in requirements (and consequent design changes) during construction.
- **Properly supervise construction work.** Maintain an adequate number of properly trained Supervisor of Shipbuilding (SUPSHIP) personnel.
- **Provide stability for industry**, in part by using, where possible, MYP or block buy contracting.
- **Maintain a capable government acquisition workforce** that understands what it is buying, as well as the above points.

Identifying these lessons is not the hard part—most if not all these points have been cited for years. The hard part is living up to them without letting circumstances lead program-execution efforts away from these guidelines.

[45] Material in this appendix is adapted from Statement of Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service, Before the House Armed Services Committee on Case Studies in DOD Acquisition: Finding What Works, June 24, 2014, pp. 8-9. A version also appeared in Statement of Ronald O'Rourke, Specialist in Naval Affairs, Before House Armed Services Committee, Seapower and Projection Forces Subcommittee, Hearing on Acquisition Efficiency and the Future Navy Force, December 1, 2015, p. 25 (available as CRS Testimony TE10001, *Acquisition Efficiency and the Future Navy Force*, by Ronald O'Rourke).

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Statement before the

House Coast Guard and Maritime Transportation Subcommittee

"Coast Guard Arctic Implementation Capabilities"

A Testimony by:

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U.S. National Security in the Arctic

Chairman Hunter, Ranking Member Garamendi, Members of the Subcommittee, it is a privilege to testify before you today regarding "Coast Guard Arctic Implementation Capabilities." While my fellow panelists will offer their considerable insights on specific U.S. capability requirements in the Arctic, I would like to provide the Subcommittee with some thoughts on broader Arctic national security challenges and their relation to U.S. readiness and capabilities.

The United States has always prioritized its national security interests in the Arctic. In every National Security Presidential Directive over the past thirty years, the U.S. has affirmed our "unique and critical interests in the Arctic region related directly to national defense," (1983)[1] our need to ensure "basic national security and defense interests in the Arctic region … in maintaining peace and stability …maintain[ing] the ability to protect against attack across the Arctic, to move ships and aircraft freely," (1994)[2] a requirement to "meet national and homeland security needs," (2009)[3] and "U.S. security in the Arctic encompasses a broad spectrum of activities, ranging from those supporting safe commercial and scientific operation to national defense" (Arctic Strategy 2013).[4] The most pressing U.S. security interests in the region include "hard security" threats such as: "missile defense and early-warning systems; deployment of sea and air systems for strategic sealift, strategic deterrence, maritime presence, and maritime security operations; ensuring freedom of navigation and overflight; and preventing terrorist attacks and mitigating criminal or hostile acts that could increase U.S. vulnerability to terrorism in the Arctic region." (2009)[5]

Yet, rarely is Arctic security defined in Washington by such "hard security" threats or discussed in such stark terms. There is a lack of consensus about what exactly constitutes national security in the Arctic because so many different groups define security in the Arctic differently. For some, it is hard security concepts such as America's missile defense architecture at Fort Greely Air Base in Alaska and Thule Air Force Base in Greenland, the increased presence of Russian special forces and placement of surface-to-air missiles on remote Russian Arctic islands, as well as the increased activity of Russian submarines in the North Atlantic. Yet for others, security in the Arctic means search and rescue operations, oil spill response, infrastructure development, greater maritime domain awareness, and U.S. energy security. Still others view water, food and

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[1] Ronald Reagan, "United States Arctic Policy," National Security Decision Directive Number 90, *Washington DC*, April 14, 1983. https://reaganlibrary.archives.gov/archives/reference/Scanned%20NSDDS/NSDD90.pdf.
[2] Bill Clinton, "United States Policy on the Arctic and Antarctic Regions," Presidential Decision Directive/NSC-26, *Washington DC*, June 9, 1994. https://fas.org/irp/offdocs/pdd/pdd-26.pdf.
[3] George W. Bush, "Arctic Region Policy," National Security Presidential Directive/NSPD-66, Homeland Security Presidential Directive/HSPD – 25, *Washington DC*, January 9, 2009. http://fas.org/irp/offdocs/nspd/nspd-66.htm.
[4] The White House, "National Security Strategy for the Arctic Region," *Washington DC*, May 2013. https://www.whitehouse.gov/sites/default/files/docs/nat_arctic_strategy.pdf.
[5] George W. Bush, "Arctic Region Policy," National Security Presidential Directive/NSPD-66, Homeland Security Presidential Directive/HSPD – 25, *Washington DC*, January 9, 2009. http://fas.org/irp/offdocs/nspd/nspd-66.htm.

human security of indigenous populations as well as coastal village relocation – of which the U.S. Government Accountability Office estimates that coastal relocation for the village of Kivalina could cost up to $1 million per person – as paramount security concerns.[6] Ambassador Mark Brzezinski, Executive Director of the Arctic Executive Steering Committee best captured this view recently when he stated that, "… It involves food security – food security as it pertains to subsistence communities in the Arctic. Water and sanitation is one of the central organizing challenges in rural Alaska, access to clean water. So I define national security as it pertains to the Arctic broadly."[7]

There is so much definitional confusion about Arctic security because it encompasses all of these forms of security – from missile defense and search and rescue to water and sanitation. Because the Obama Administration has primarily focused on the human and environmental dimension of this Arctic security challenge, which is certainly considerable, senior officials have tended to discount or deny significant changes to Russia's military posture in the Arctic. Interestingly other Arctic nations, such as Denmark, Finland and Norway, have recently recognized the growing hard security threats in the Arctic and have begun to make necessary adjustments to their defense budgets and force posture. This past May, the Danish Ministry of Foreign Affairs reviewed its foreign and security policy toward the Arctic noting, "in light of the increased military presence and activity level in the Arctic, it should be explored whether there is support for a discussion forum on security policy related to the Arctic."[8] In response, the Danish government anticipates, "The Armed Forces should continue to develop a single set of robust military capabilities which are flexible and, in cooperation with our allies, can be used for the entire spectrum of tasks, including as a genuine deterrent for high intensity operations against a capable opponent."[9]

The Government of Finland updated its security policy highlighting an increasingly militarized Arctic, notably due to a Russian military installation in the town of Alakurtti, 31 miles from the Finnish border. As of January 2016, the base holds approximately 800 servicemen from Russia's Northern Fleet. The rest of Russia's Northern Fleet – which includes 3,000 ground troops

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[6] "Alaska Native Villages: Most Are Affected by Flooding and Erosion, but Few Qualify for Federal Assistance," *United States General Accounting Office*, December 2003. http://www.gao.gov/new.items/d04142.pdf.

[7] Ambassador Mark Brzezinski, "A Discussion on National Security Risks in the Changing Arctic," Panel Discussion, Council on Foreign Relations, Washington DC, June 9, 2016. http://www.cfr.org/arctic/discussion-national-security-risks-changing-arctic/p37929.

[8] Danish Ministry of Foreign Affairs, "Danish Defence and Diplomacy in Times of Change – A review of Denmark's Foreign and Security Policy," May 2016. http://um.dk/en/foreign-policy/danish-defence-and-diplomacy-in-times-of-change/.

[9] Danish Ministry of Foreign Affairs, "Danish Defence and Diplomacy in Times of Change – A review of Denmark's Foreign and Security Policy," May 2016. http://um.dk/en/foreign-policy/danish-defence-and-diplomacy-in-times-of-change/.

trained for combat in Arctic conditions – will be stationed there soon.[10] The strategy openly names Russia as a primary culprit of this new trend, stating, "in recent years Russia has also increased its military footprint and activity in the Arctic, where the situation, so far, has remained relatively stable."[11] Perhaps the strongest recognition of this trend and the security implications came from the Norwegians. In June, the Norwegian Ministry of Defense published a "Capable and Sustainable Long Term Defense Plan" that warned, "...we cannot rule out the possibility that Russia in a given situation will consider the use of military force to be a relevant tool, also in the High North."[12] The plan also proposed an increase in defense spending that would allow for a new maritime patrol aircraft to replace the current P-3 Orion aircraft.[13] Norway also agreed to host NATO's 2018 Trident Juncture exercise, which is expected to include around 36,000 soldiers and personnel from over 30 nations.[14]

It is clear that the projection of power in the Arctic today and in the future will be increasingly defined by both traditional hard power (as evidenced by Russia's build-up of military presence in the Russian Arctic) as well as the softer power of superior logistics and infrastructure capabilities, science, technology, the combined intuition of traditional and 21st century knowledge, accurate predictive meteorological and ice modelling, and enhanced satellite communications. The projection of power in the Arctic will be multi-faceted and require a new U.S. approach to the region. The U.S. has yet to formally embrace this dual hard and soft power approach because to do so would require difficult budget decisions and prioritization. In lieu of this, Washington reverts to a near-constant assessment process of U.S. infrastructure and security needs in the Arctic, which justifies postponed decision-making. We have effectively ended up with a largely inadequate paper policy, which constitutes impressive strategies but lacks clarity, leadership, and budget prioritization.

Against this broader security backdrop, the U.S. has decided to accelerate the acquisition of one heavy icebreaker. Will a single icebreaker meet America's comprehensive security needs in the Arctic?

No, but it will certainly enhance the U.S.' operational capacity, state of readiness, and ability to respond and be resilient in the face of rapid change in the Arctic which we currently lack. But it

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[10] Jeremy Bender, "Russia is Constructing An Arctic Stronghold 30 Miles From The Finnish Border," *Business Insider*, January 14, 2015. http://www.businessinsider.com/russian-arctic-base-miles-from-finnish-border-2015-1.
[11] Prime Minister's Office of Finland, "Government Report on Finnish Foreign and Security Policy," June 17, 2016. http://valtioneuvosto.fi/documents/10616/1986338/VNKJ092016+en.pdf/b33e3703-29f4-4cee-a910-b05e32b676b9.
[12] Norwegian Ministry of Defence, "Capable and Sustainable Long Term Defence Plan," June 17, 2016. https://www.regjeringen.no/globalassets/departementene/fd/dokumenter/rapporter-og-regelverk/capable-and-sustainable-ltp-english-brochure.pdf.
[13] Beth Stevenson, "Norway reveals P-3 replacement plans," *Flight Global*, June 21, 2016. https://www.flightglobal.com/news/articles/norway-reveals-p-3-replacement-plans-426544/.

[14] Norwegian Armed Forces, " Trident Juncture 2018," June 28, 2016. https://forsvaret.no/en/exercise-and-operations/exercises/nato-exercise-2018.

is also important to note that this heavy icebreaker is not solely intended for use in the Arctic. It will also be utilized in Antarctica as the U.S. currently lacks additional and redundant heavy icebreaking capabilities should the recently refurbished 1970s-constructed Polar Star become inoperable when resupplying the McMurdo Research Station in Antarctica. It was very fortuitous that in December 2012 the USCG Cutter Healy was in the Arctic when Nome, Alaska required icebreaking capabilities to escort a Russian fuel tanker bringing emergency fuel to Nome. Due to limited assets above the Arctic Circle, the Coast Guard has at times been forced to rely on third-party responders as it did in July 2007, when a Shell Oil Company helicopter and Canadian Coast Guard cutter assisted a 20-foot skiff near Barrow, Alaska. The U.S. has asked other countries to loan us their spare icebreaking capacity only to be told that it may not be available when needed should the country urgently need its own icebreaking capabilities closer to home. Moreover, even as the U.S. embarks on what could be a ten-year acquisition process, it is unclear what the interim U.S. icebreaker capability strategy is for the next decade. Change in the Arctic is only accelerating, and it will not wait for our procurement schedule. As the world's leading maritime power, the United States has been living on good luck and borrowed time for far too long. I fear the future incident when our luck runs out.

Let us be clear: one icebreaker is not a silver bullet, nor is it a substitute for enhanced satellite communications, aviation assets, deep-water ports, navigational aids, and internationally approved hydrographic mapping.[15] It does not solve the funding challenges of the Long Range Radar sites in Alaska, which track aircraft through Alaskan airspace and along its borders, can serve as emergency airfields or halfway points for refuelling, and support Air Force Space Command and Missile Defence Agency operations.[16] It does not enhance our military's cold weather fighting capabilities. It does not build new U.S. Coast Guard operating bases or stations above the Arctic Circle, which would improve search and rescue or maritime deployment in the Arctic, which now constitutes a minimum of eight hours by air and days by sea. It is only one piece of the larger Arctic security puzzle.

These extremely limited capabilities I have just highlighted call into question the ability of the U.S. Coast Guard and the U.S. Government to be able to perform basic national security tasks in the Arctic let alone prevent future oil spills, assist in mass casualty events, respond to shipping accidents, acts of terrorism, and ensure strong maritime law enforcement in the Arctic. And my fear is that our near-exclusive focus on acquiring one heavy icebreaker will be deemed sufficient for future U.S. Arctic readiness. It is a vital start to a much longer and more expensive proposition.

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[15] Heather A. Conley, "To Build or Not to Build an Icebreaker? That is the $1 Billion Funding Question," *CSIS*, September 1, 2015. http://csis.org/publication/build-or-not-build-icebreaker-1-billion-funding-question.
[16] Kyle Johnson, "Securing Alaska's airspace: Radar sites work around the clock," U.S. Air Force, August 3, 2015. http://www.af.mil/News/ArticleDisplay/tabid/223/Article/611931/securing-alaskas-airspace-radar-sites-work-around-the-clock.aspx.

The Obama Administration has taken a leadership role in identifying readiness and preparedness as a major task for the American Arctic. The U.S. has co-led efforts to negotiate international search and rescue and oil spill response agreements as well as providing the impetus for the creation of the Arctic Coast Guard Forum. But the U.S. has been slow to develop the necessary infrastructure to implement these search and rescue and oil spill response capabilities. Offshore Arctic energy exploration in the U.S Arctic has been indefinitely postponed as the Royal Dutch Shell Company decided to end its drilling campaign and not pursue its leases any further. As a result, numerous infrastructure and research projects have come to an abrupt end. In October, the Army Corps of Engineers announced another year's postponement to a study to determine the feasibility of its first deep-water port, which has been designed to support vessels in the Arctic. The Corps began studying the feasibility of a port in 2011, and it is now questioning the economic benefit of moving forward with the project.[17]

The U.S. Coast Guard recognizes the growing concern of potential future maritime accidents in the narrow Bering Straits and the heightened risk factor posed by increased traffic through the Straits. It recommended a vessel traffic management scheme (e.g. speed limits, shipping lanes, and designated hazard areas) and the construction of ocean "highways" that would be hydrographically mapped to international standards and have state-of-the-art navigational aids. Steps are currently being taken to plot these shipping routes but the Russian Federation has not yet agreed to participate in this scheme which will be vital to its success.

Arctic security will be challenged this August by the Chrystal Serenity, a 1,700-passenger and crew cruise ship which will traverse the ice-clogged North West Passage, which has limited infrastructure. In cooperation with U.S. Northern Command (NORTHCOM), the U.S. Coast Guard will simultaneously host a search and rescue exercise – Operation Chinook – with participating nations to identify challenges and gaps in search and rescue capabilities. We will learn a great deal from the voyage of the Chrystal Serenity, which we hope will be incident free.

Simply put, U.S. national security needs and challenges in the American Arctic far surpass existing Coast Guard implementation capabilities and the value added of acquiring one heavy icebreaker. It is however an important step forward and I hope that its acquisition fuels greater investment and a comprehensive approach to addressing national security challenges in the Arctic.

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[17] Alex DeMarban, "Work toward deep-water port in Alaska Arctic on hold, Army Corps says," *Arctic Newswire*, October 26, 2015. http://www.adn.com/article/20151026/work-toward-deep-water-port-alaska-arctic-hold-army-corps-says.

In closing, Russian Deputy Prime Minister Dmitry Rogozin, the chair of Russia's Arctic Commission, said this to Russian President Putin last week[18]: *"I would like to say that all efforts taken to create the icebreaker fleet, to restore it, are closely connected with our plans for enhanced national security in the Arctic region [...]"*. The United States, in contrast, cannot say this today.

[18] Atle Staalesen, "Future of icebreaker fleet on President's table," *The Barents Observer,* July 4, 2016. http://thebarentsobserver.com/arctic/2016/07/future-icebreaker-fleet-governments-table.

BEFORE THE

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON COAST GUARD AND MARITIME TRANSPORTATION

On

Coast Guard Arctic Implementation Capabilities

July 12, 2016
Room 2167 of the Rayburn House Office Building

Testimony of

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Thank you Chairman Hunter, Ranking Member Garamendi and members of the Subcommittee on Coast Guard and Maritime Transportation, for the opportunity for the Shipbuilders Council of America to testify at this important hearing regarding Coast Guard Arctic Implementation Capabilities. I am Matthew Paxton, President of the Shipbuilders Council of America, the largest national trade association representing the U.S. shipyard industry. The SCA, which has been in existence since 1920, represents 83 member shipyard facilities and 94 industry partner member companies that are part of the vital supply chain that make up the shipyard industrial base.

SCA member shipyards are located along the eastern seaboard, the Gulf coast, Great Lakes, on the inner river system, West Coast, Alaska and Hawaii. SCA's members build, repair and maintain America's fleet of 40,000 commercial vessels. These shipyards and suppliers also constitute the shipyard industrial base that builds and repairs the most advanced and lethal Navy fleet in the world and also builds every class of vessel for the U.S. Coast Guard, as well as numerous vessels for other government services and agencies.

My testimony this morning will focus primarily on the capability and capacity of the domestic shipyard industry to build and maintain the next generation of polar icebreakers. In addition, my testimony will speak specifically to the ability of the U.S. shipyard industry to deliver polar icebreakers as specified in the Coast Guard's "Polar

Icebreaker Acquisition Directorate" as presented at the Industry Day on March 18, 2016.[1] However, within the shipyard membership of this trade association there are differing views on how the Coast Guard might best acquire an updated polar icebreaking capability, so I will refrain from promoting any specific approaches.

The U.S. shipyard industry is certainly up to the task of building polar icebreakers and has the expertise, the capability, the critical capacity and the unmatched skilled workforce to build these national assets. In fact, in a letter sent to this subcommittee nearly 5 years ago, SCA member companies urged the Congress, the Coast Guard and the Administration to work together to quickly authorize and fund such a project to deliver these critical vessels to meet the nation's future strategic icebreaking needs.[2] The U.S. shipbuilding industry is excited and eager for the opportunity to compete to build the Coast Guard's next icebreakers.

While it is true that the U.S. shipyard industry has not designed and constructed a heavy icebreaker in the past forty years, since delivering the *Polar Star* in 1976 and the *Polar Sea* in 1978, we have delivered several other icebreakers during that period. The medium polar icebreaker *Healy* was put into service August 21, 2000, and is actually larger than the heavy icebreakers the *Polar Star* and *Polar Sea*. The *Nathaniel B. Palmer,* a smaller icebreaker specifically built for conducting scientific research for the National Science Foundation, was delivered in 1992. For icebreaking operations on the

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[1] Coast Guard polar icebreaker program industry day briefing entitled "Polar Icebreaker (PIB) Acquisition Program Industry Engagement," slide 23.

[2] *Letter from Shipbuilders Council of America to Subcommittee on Coast Guard and Maritime Transportation dated November 28, 2011, in support of testimony from Vigor Industrial before the Subcommittee hearing titled "Protecting U.S. Sovereignty: Coast Guard Operations in the Arctic," on December 1, 2011.*

Great Lakes, the *Mackinaw* was delivered to the Coast Guard on November 18, 2005, and commissioned on June 10, 2006. In addition, the commercial icebreaking anchor-handling tug supply vessel the *Aiviq* was delivered in 2012.

These icebreakers were built in U.S. shipyards in the Pacific Northwest, along the Gulf Coast and on the Great Lakes. I can tell you today there is strong interest in icebreaker construction from at least 10 shipyards located around the nation from the Northeast to California to the Northwest and again along the Gulf Coast and Great Lakes region. Again, because of this interest from member shipyards of the SCA who may be competing for this project, it would not be appropriate to comment on the various pros and cons of the numerous shipyards that are interested in building the next Coast Guard icebreaker. However, this level of interest across the U.S. shipyard industrial base will ensure a robust level of competition for this project, which is certainly good for the Coast Guard and for the nation.

The same situation is true amongst the supplier base for the shipyards. The 94 industry partners of the SCA have the capabilities, equipment and technology available to support the building of the Polar Icebreaker. There are multiple design solutions available that will create a competitive environment for all potential suppliers as they support the shipyards.

The domestic shipyard industry certainly has the capability and know-how to build the next generation of Coast Guard icebreakers. The Maritime Administration determined in a recent study on the Economic Benefits of the U.S. Shipyard Industry that there are nearly 110,000 skilled craftsmen in the Nation's private shipyards building and repairing America's military and commercial fleets.[3] The report found the U.S. shipbuilding industry supports nearly 400,000 jobs across the country and generates $25.1 billion in income and $37.3 billion worth of goods and services each year.. In fact, the MARAD report found that the shipyard industry creates direct and induced employment in every State and Congressional District and each job in the private shipbuilding and repairing industry supports another 2.6 jobs nationally. This data confirms the significant economic impact of this manufacturing sector, but also that the skilled workforce and industrial base is present domestically to build these ships and would not need to ramp up or reconfigure itself to build these strategic assets.

U.S. shipyards pride themselves on implementing state of the art training and apprenticeship programs to develop skilled craftsman that can cut, weld, bend and build truly first of kind vessels and the best Navy and Coast Guard in the world. There certainly is the capability within the workforce in our shipyard industry to build these icebreakers. For instance, the steel requirements for a heavy icebreaker rated at Polar Code 1, the highest icebreaking requirement, is steel thickness in the 50 millimeter range. Presently, U.S. shipyards building for the commercial containership market handle, cut, weld and form steels for these ships that are at 65 millimeter in thickness and of similar

[3] "Economic Importance of the U.S. Shipbuilding and Repairing Industry". Maritime Administration (MARAD), November 2015

grade to the Polar Code requirement. In addition, many of our shipyards work in heavy steel construction beyond ships, building structures for nuclear power plants that are 3 to 4 inches thick. These are just a few examples of the critical skills that would be needed to build a polar icebreaker where members of our industry association have recent and relevant experience.

Any notion that our industry could not handle the engineering and manufacturing of steel hulls rated at the highest polar codes for icebreaking, just does not understand the capability of the domestic shipyard industry.

As a final recommendation to the committee, to build these ships in as timely and affordable manner as possible there must be precise and stable Coast Guard validated requirements. Validated and stable requirements are absolutely essential to a successful program. There is language in the House 2017 Defense Authorization bill requiring the Coast Guard provide Congress and industry with validated operational requirements in the near term and we believe that is a step in the right direction.

If there are validated and stable requirements in place, the time to construct a polar icebreaker, from the start of concept design and construction to delivery would be roughly 7 and a half years. This is exclusive of the time that government activities take during the acquisition process

Again, I would like to thank this Subcommittee for inviting me to testify alongside such distinguished witnesses. As a representative of our Nation's private shipyards, I can say, with confidence and certainty, that our domestic shipyards and skilled workers are ready and able to build the next generation of Coast Guard polar icebreakers.

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